SEQUENCE LISTING

<110> Furusawa, Mitsuru

<120> METHOD AND SYSTEM FOR RAPIDLY CONFERRING
A DESIRED TRAIT TO AN ORGANISM

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<141> 2003-10-10

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gaaatagagg aaaaggaaaa tcaggattat accgctgttt cgcaatggca actaaagaag 6420
tttctgtcac caatatatca gcccgaattt gaggattgga tgatgatcat attggatagt 6480
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atagttaatg taaaaaaaca agataaggaa gatagtgttg aaaactcgtt gaacggattt 6600
tctcaccttt tttccaaacc actaatgaaa agagtcaaaa agcttttaa aaaccagcaa 6660
gagttcattt tagatcctca gtatgaggca gactatgtta ttcctgttct tcctggttcc 6720
catctgaatg tgaaaaatcc ccttctagaa cttgtcaaat cactctgcca tgtcatgtta 6780
ctttcaaaga gtacaatttt agaaatcagg accctgagaa aagaactgct gaagatattt 6840
gaattgcgtg agtttgctaa agtagcggaa ttcaaagatc caagtttgag tctcgtggtg 6900
ccggattttt tatgtgaata ctgtttttc atttctgata ttgacttttg taaggcagct 6960
cctgaatcta ttttttcatg cgtcagatgt cacaaagcct ttaatcaagt attgttgcaa 7020
gaacacctga ttcaaaaact acgttctgat atcgaatcct atttaattca agatttgaga 7080
tgctccagat gtcataaagt gaaacgtgac tatatgagtg cccactgtcc atgtgccggc 7140
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gtaagcagta tataacgcga ggttcaatgg cctctttacc atgaaaaaaa aaaaaaaaaa 7320
aaaaaaaagg taaggaaaaa gagtattttc aattcgtttc tgaacatata aatataaata 7380
accgaaaaat tagcccttga acataattaa cactcttctt tgatatttaa atcacaagta 7440
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<211> 2222
<212> PRT
<213> Saccharomyces cerevisiae

<400> 4
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 1               5                  10                  15
Tyr Ser Ala Gly Asn Lys Tyr Asn Thr Leu Ser Asn Asn Tyr Ala Leu
            20                  25                  30
Ser Ala Gln Gln Leu Leu Asn Ala Ser Lys Ile Asp Asp Ile Asp Ser
        35                  40                  45
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Met Met Gly Phe Glu Arg Tyr Val Pro Pro Gln Tyr Asn Gly Arg Phe
    50                  55                  60
Asp Ala Lys Asp Ile Asp Gln Ile Pro Gly Arg Val Gly Trp Leu Thr
65                  70                  75                  80
Asn Met His Ala Thr Leu Val Ser Gln Glu Thr Leu Ser Ser Gly Ser
                85                  90                  95
Asn Gly Gly Gly Asn Ser Asn Asp Gly Glu Arg Val Thr Thr Asn Gln
            100                 105                 110
Gly Ile Ser Gly Val Asp Phe Tyr Phe Leu Asp Glu Glu Gly Gly Ser
        115                 120                 125
Phe Lys Ser Thr Val Val Tyr Asp Pro Tyr Phe Phe Ile Ala Cys Asn
    130                 135                 140
Asp Glu Ser Arg Val Asn Asp Val Glu Glu Leu Val Lys Lys Tyr Leu
145                 150                 155                 160
Glu Ser Cys Leu Lys Ser Leu Gln Ile Ile Arg Lys Glu Asp Leu Thr
                165                 170                 175
Met Asp Asn His Leu Leu Gly Leu Gln Lys Thr Leu Ile Lys Leu Ser
            180                 185                 190
Phe Val Asn Ser Asn Gln Leu Phe Glu Ala Arg Lys Leu Leu Arg Pro
        195                 200                 205
Ile Leu Gln Asp Asn Ala Asn Asn Asn Val Gln Arg Asn Ile Tyr Asn
    210                 215                 220
Val Ala Ala Asn Gly Ser Glu Lys Val Asp Ala Lys His Leu Ile Glu
225                 230                 235                 240
Asp Ile Arg Glu Tyr Asp Val Pro Tyr His Val Arg Val Ser Ile Asp
                245                 250                 255
Lys Asp Ile Arg Val Gly Lys Trp Tyr Lys Val Thr Gln Gln Gly Phe
            260                 265                 270
Ile Glu Asp Thr Arg Lys Ile Ala Phe Ala Asp Pro Val Val Met Ala
        275                 280                 285
Phe Asp Ile Glu Thr Thr Lys Pro Pro Leu Lys Phe Pro Asp Ser Ala
    290                 295                 300
Val Asp Gln Ile Met Met Ile Ser Tyr Met Ile Asp Gly Glu Gly Phe
305                 310                 315                 320
Leu Ile Thr Asn Arg Glu Ile Ile Ser Glu Asp Ile Glu Asp Phe Glu
                325                 330                 335
Tyr Thr Pro Lys Pro Glu Tyr Pro Gly Phe Phe Thr Ile Phe Asn Glu
            340                 345                 350
Asn Asp Glu Val Ala Leu Leu Gln Arg Phe Phe Glu His Ile Arg Asp
        355                 360                 365
Val Arg Pro Thr Val Ile Ser Thr Phe Asn Gly Asp Phe Phe Asp Trp
    370                 375                 380
Pro Phe Ile His Asn Arg Ser Lys Ile His Gly Leu Asp Met Phe Asp
385                 390                 395                 400
Glu Ile Gly Phe Ala Pro Asp Ala Glu Gly Glu Tyr Lys Ser Ser Tyr
                405                 410                 415
Cys Ser His Met Asp Cys Phe Arg Trp Val Lys Arg Asp Ser Tyr Leu
            420                 425                 430
Pro Gln Gly Ser Gln Gly Leu Lys Ala Val Thr Gln Ser Lys Leu Gly
        435                 440                 445
Tyr Asn Pro Ile Glu Leu Asp Pro Glu Leu Met Thr Pro Tyr Ala Phe
    450                 455                 460
Glu Lys Pro Gln His Leu Ser Glu Tyr Ser Val Ser Asp Ala Val Ala
465                 470                 475                 480
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Thr Tyr Tyr Leu Tyr Met Lys Tyr Val His Pro Phe Ile Phe Ser Leu
                485                 490                 495
Cys Thr Ile Ile Pro Leu Asn Pro Asp Glu Thr Leu Arg Lys Gly Thr
            500                 505                 510
Gly Thr Leu Cys Glu Met Leu Leu Met Val Gln Ala Tyr Gln His Asn
        515                 520                 525
Ile Leu Leu Pro Asn Lys His Thr Asp Pro Ile Glu Arg Phe Tyr Asp
    530                 535                 540
Gly His Leu Leu Glu Ser Glu Thr Tyr Val Gly Gly His Val Glu Ser
545                 550                 555                 560
Leu Glu Ala Gly Val Phe Arg Ser Asp Leu Lys Asn Glu Phe Lys Ile
                565                 570                 575
Asp Pro Ser Ala Ile Asp Glu Leu Leu Gln Glu Leu Pro Glu Ala Leu
            580                 585                 590
Lys Phe Ser Val Glu Val Glu Asn Lys Ser Ser Val Asp Lys Val Thr
        595                 600                 605
Asn Phe Glu Glu Ile Lys Asn Gln Ile Thr Gln Lys Leu Leu Glu Leu
    610                 615                 620
Lys Glu Asn Asn Ile Arg Asn Glu Leu Pro Leu Ile Tyr His Val Asp
625                 630                 635                 640
Val Ala Ser Met Tyr Pro Asn Ile Met Thr Thr Asn Arg Leu Gln Pro
                645                 650                 655
Asp Ser Ile Lys Ala Glu Arg Asp Cys Ala Ser Cys Asp Phe Asn Arg
            660                 665                 670
Pro Gly Lys Thr Cys Ala Arg Lys Leu Lys Trp Ala Trp Arg Gly Glu
        675                 680                 685
Phe Phe Pro Ser Lys Met Asp Glu Tyr Asn Met Ile Lys Arg Ala Leu
    690                 695                 700
Gln Asn Glu Thr Phe Pro Asn Lys Asn Lys Phe Ser Lys Lys Lys Val
705                 710                 715                 720
Leu Thr Phe Asp Glu Leu Ser Tyr Ala Asp Gln Val Ile His Ile Lys
                725                 730                 735
Lys Arg Leu Thr Glu Tyr Ser Arg Lys Val Tyr His Arg Val Lys Val
            740                 745                 750
Ser Glu Ile Val Glu Arg Glu Ala Ile Val Cys Gln Arg Glu Asn Pro
        755                 760                 765
Phe Tyr Val Asp Thr Val Lys Ser Phe Arg Asp Arg Arg Tyr Glu Phe
    770                 775                 780
Lys Gly Leu Ala Lys Thr Trp Lys Gly Asn Leu Ser Lys Ile Asp Pro
785                 790                 795                 800
Ser Asp Lys His Ala Arg Asp Glu Ala Lys Lys Met Ile Val Leu Tyr
                805                 810                 815
Asp Ser Leu Gln Leu Ala His Lys Val Ile Leu Asn Ser Phe Tyr Gly
            820                 825                 830
Tyr Val Met Arg Lys Gly Ser Arg Trp Tyr Ser Met Glu Met Ala Gly
        835                 840                 845
Ile Thr Cys Leu Thr Gly Ala Thr Ile Ile Gln Met Ala Arg Ala Leu
    850                 855                 860
Val Glu Arg Val Gly Arg Pro Leu Glu Leu Asp Thr Asp Gly Ile Trp
865                 870                 875                 880
Cys Ile Leu Pro Lys Ser Phe Pro Glu Thr Tyr Phe Phe Thr Leu Glu
                885                 890                 895
Asn Gly Lys Lys Leu Tyr Leu Ser Tyr Pro Cys Ser Met Leu Asn Tyr
            900                 905                 910
```

```
Arg Val His Gln Lys Phe Thr Asn His Gln Tyr Gln Glu Leu Lys Asp
        915                 920                 925
Pro Leu Asn Tyr Ile Tyr Glu Thr His Ser Glu Asn Thr Ile Phe Phe
    930                 935                 940
Glu Val Asp Gly Pro Tyr Lys Ala Met Ile Leu Pro Ser Ser Lys Glu
945                 950                 955                 960
Glu Gly Lys Gly Ile Lys Lys Arg Tyr Ala Val Phe Asn Glu Asp Gly
                965                 970                 975
Ser Leu Ala Glu Leu Lys Gly Phe Glu Leu Lys Arg Arg Gly Glu Leu
            980                 985                 990
Gln Leu Ile Lys Asn Phe Gln Ser Asp Ile Phe Lys Val Phe Leu Glu
        995                 1000                1005
Gly Asp Thr Leu Glu Gly Cys Tyr Ser Ala Val Ala Ser Val Cys Asn
    1010                1015                1020
Arg Trp Leu Asp Val Leu Asp Ser His Gly Leu Met Leu Glu Asp Glu
1025                1030                1035                1040
Asp Leu Val Ser Leu Ile Cys Glu Asn Arg Ser Met Ser Lys Thr Leu
                1045                1050                1055
Lys Glu Tyr Glu Gly Gln Lys Ser Thr Ser Ile Thr Thr Ala Arg Arg
            1060                1065                1070
Leu Gly Asp Phe Leu Gly Glu Asp Met Val Lys Asp Lys Gly Leu Gln
        1075                1080                1085
Cys Lys Tyr Ile Ile Ser Ser Lys Pro Phe Asn Ala Pro Val Thr Glu
    1090                1095                1100
Arg Ala Ile Pro Val Ala Ile Phe Ser Ala Asp Ile Pro Ile Lys Arg
1105                1110                1115                1120
Ser Phe Leu Arg Arg Trp Thr Leu Asp Pro Ser Leu Glu Asp Leu Asp
                1125                1130                1135
Ile Arg Thr Ile Ile Asp Trp Gly Tyr Tyr Arg Glu Arg Leu Gly Ser
            1140                1145                1150
Ala Ile Gln Lys Ile Ile Thr Ile Pro Ala Ala Leu Gln Gly Val Ser
        1155                1160                1165
Asn Pro Val Pro Arg Val Glu His Pro Asp Trp Leu Lys Arg Lys Ile
    1170                1175                1180
Ala Thr Lys Glu Asp Lys Phe Lys Gln Thr Ser Leu Thr Lys Phe Phe
1185                1190                1195                1200
Ser Lys Thr Lys Asn Val Pro Thr Met Gly Lys Ile Lys Asp Ile Glu
                1205                1210                1215
Asp Leu Phe Glu Pro Thr Val Glu Glu Asp Asn Ala Lys Ile Lys Ile
            1220                1225                1230
Ala Arg Thr Thr Lys Lys Lys Ala Val Ser Lys Arg Lys Arg Asn Gln
        1235                1240                1245
Leu Thr Asn Glu Glu Asp Pro Leu Val Leu Pro Ser Glu Ile Pro Ser
    1250                1255                1260
Met Asp Glu Asp Tyr Val Gly Trp Leu Asn Tyr Gln Lys Ile Lys Trp
1265                1270                1275                1280
Lys Ile Gln Ala Arg Asp Arg Lys Arg Arg Asp Gln Leu Phe Gly Asn
                1285                1290                1295
Thr Asn Ser Ser Arg Glu Arg Ser Ala Leu Gly Ser Met Ile Arg Lys
            1300                1305                1310
Gln Ala Glu Ser Tyr Ala Asn Ser Thr Trp Glu Val Leu Gln Tyr Lys
        1315                1320                1325
Asp Ser Gly Glu Pro Gly Val Leu Glu Val Phe Val Thr Ile Asn Gly
    1330                1335                1340
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Lys Val Gln Asn Ile Thr Phe His Ile Pro Lys Thr Ile Tyr Met Lys
1345                1350                1355                1360
Phe Lys Ser Gln Thr Met Pro Leu Gln Lys Ile Lys Asn Cys Leu Ile
                1365                1370                1375
Glu Lys Ser Ser Ala Ser Leu Pro Asn Asn Pro Lys Thr Ser Asn Pro
            1380                1385                1390
Ala Gly Gly Gln Leu Phe Lys Ile Thr Leu Pro Glu Ser Val Phe Leu
        1395                1400                1405
Glu Glu Lys Glu Asn Cys Thr Ser Ile Phe Asn Asp Glu Asn Val Leu
    1410                1415                1420
Gly Val Phe Glu Gly Thr Ile Thr Pro His Gln Arg Ala Ile Met Asp
1425                1430                1435                1440
Leu Gly Ala Ser Val Thr Phe Arg Ser Lys Ala Met Gly Ala Leu Gly
                1445                1450                1455
Lys Gly Ile Gln Gln Gly Phe Glu Met Lys Asp Leu Ser Met Ala Glu
            1460                1465                1470
Asn Glu Arg Tyr Leu Ser Gly Phe Ser Met Asp Ile Gly Tyr Leu Leu
        1475                1480                1485
His Phe Pro Thr Ser Ile Gly Tyr Glu Phe Phe Ser Leu Phe Lys Ser
    1490                1495                1500
Trp Gly Asp Thr Ile Thr Ile Leu Val Leu Lys Pro Ser Asn Gln Ala
1505                1510                1515                1520
Gln Glu Ile Asn Ala Ser Ser Leu Gly Gln Ile Tyr Lys Gln Met Phe
                1525                1530                1535
Glu Lys Lys Lys Gly Lys Ile Glu Thr Tyr Ser Tyr Leu Val Asp Ile
            1540                1545                1550
Lys Glu Asp Ile Asn Phe Glu Phe Val Tyr Phe Thr Asp Ile Ser Lys
        1555                1560                1565
Leu Tyr Arg Arg Leu Ser Gln Glu Thr Thr Lys Leu Lys Glu Glu Arg
    1570                1575                1580
Gly Leu Gln Phe Leu Leu Leu Leu Gln Ser Pro Phe Ile Thr Lys Leu
1585                1590                1595                1600
Leu Gly Thr Ile Arg Leu Leu Asn Gln Met Pro Ile Val Lys Leu Ser
                1605                1610                1615
Leu Asn Glu Val Leu Leu Pro Gln Leu Asn Trp Gln Pro Thr Leu Leu
            1620                1625                1630
Lys Lys Leu Val Asn His Val Leu Ser Ser Gly Ser Trp Ile Ser His
        1635                1640                1645
Leu Ile Lys Leu Ser Gln Tyr Ser Asn Ile Pro Ile Cys Asn Leu Arg
    1650                1655                1660
Leu Asp Ser Met Asp Tyr Ile Ile Asp Val Leu Tyr Ala Arg Lys Leu
1665                1670                1675                1680
Lys Lys Glu Asn Ile Val Leu Trp Trp Asn Glu Lys Ala Pro Leu Pro
                1685                1690                1695
Asp His Gly Gly Ile Gln Asn Asp Phe Asp Leu Asn Thr Ser Trp Ile
            1700                1705                1710
Met Asn Asp Ser Glu Phe Pro Lys Ile Asn Asn Ser Gly Val Tyr Asp
        1715                1720                1725
Asn Val Val Leu Asp Val Gly Val Asp Asn Leu Thr Val Asn Thr Ile
    1730                1735                1740
Leu Thr Ser Ala Leu Ile Asn Asp Ala Glu Gly Ser Asp Leu Val Asn
1745                1750                1755                1760
Asn Asn Met Gly Ile Asp Asp Lys Asp Ala Val Ile Asn Ser Pro Ser
                1765                1770                1775
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Glu Phe Val His Asp Ala Phe Ser Asn Asp Ala Leu Asn Val Leu Arg
            1780                1785                1790
Gly Met Leu Lys Glu Trp Trp Asp Glu Ala Leu Lys Glu Asn Ser Thr
        1795                1800                1805
Ala Asp Leu Leu Val Asn Ser Leu Ala Ser Trp Val Gln Asn Pro Asn
    1810                1815                1820
Ala Lys Leu Phe Asp Gly Leu Leu Arg Tyr His Val His Asn Leu Thr
1825                1830                1835                1840
Lys Lys Ala Leu Leu Gln Leu Val Asn Glu Phe Ser Ala Leu Gly Ser
                1845                1850                1855
Thr Ile Val Tyr Ala Asp Arg Asn Gln Ile Leu Ile Lys Thr Asn Lys
            1860                1865                1870
Tyr Ser Pro Glu Asn Cys Tyr Ala Tyr Ser Gln Tyr Met Met Lys Ala
        1875                1880                1885
Val Arg Thr Asn Pro Met Phe Ser Tyr Leu Asp Leu Asn Ile Lys Arg
    1890                1895                1900
Tyr Trp Asp Leu Leu Ile Trp Met Asp Lys Phe Asn Phe Ser Gly Leu
1905                1910                1915                1920
Ala Cys Ile Glu Ile Glu Glu Lys Glu Asn Gln Asp Tyr Thr Ala Val
                1925                1930                1935
Ser Gln Trp Gln Leu Lys Lys Phe Leu Ser Pro Ile Tyr Gln Pro Glu
            1940                1945                1950
Phe Glu Asp Trp Met Met Ile Ile Leu Asp Ser Met Leu Lys Thr Lys
        1955                1960                1965
Gln Ser Tyr Leu Lys Leu Asn Ser Gly Thr Gln Arg Pro Thr Gln Ile
    1970                1975                1980
Val Asn Val Lys Lys Gln Asp Lys Glu Asp Ser Val Glu Asn Ser Leu
1985                1990                1995                2000
Asn Gly Phe Ser His Leu Phe Ser Lys Pro Leu Met Lys Arg Val Lys
                2005                2010                2015
Lys Leu Phe Lys Asn Gln Gln Glu Phe Ile Leu Asp Pro Gln Tyr Glu
            2020                2025                2030
Ala Asp Tyr Val Ile Pro Val Leu Pro Gly Ser His Leu Asn Val Lys
        2035                2040                2045
Asn Pro Leu Leu Glu Leu Val Lys Ser Leu Cys His Val Met Leu Leu
    2050                2055                2060
Ser Lys Ser Thr Ile Leu Glu Ile Arg Thr Leu Arg Lys Glu Leu Leu
2065                2070                2075                2080
Lys Ile Phe Glu Leu Arg Glu Phe Ala Lys Val Ala Glu Phe Lys Asp
                2085                2090                2095
Pro Ser Leu Ser Leu Val Val Pro Asp Phe Leu Cys Glu Tyr Cys Phe
            2100                2105                2110
Phe Ile Ser Asp Ile Asp Phe Cys Lys Ala Ala Pro Glu Ser Ile Phe
        2115                2120                2125
Ser Cys Val Arg Cys His Lys Ala Phe Asn Gln Val Leu Leu Gln Glu
    2130                2135                2140
His Leu Ile Gln Lys Leu Arg Ser Asp Ile Glu Ser Tyr Leu Ile Gln
2145                2150                2155                2160
Asp Leu Arg Cys Ser Arg Cys His Lys Val Lys Arg Asp Tyr Met Ser
                2165                2170                2175
Ala His Cys Pro Cys Ala Gly Ala Trp Glu Gly Thr Leu Pro Arg Glu
            2180                2185                2190
Ser Ile Val Gln Lys Leu Asn Val Phe Lys Gln Val Ala Lys Tyr Tyr
        2195                2200                2205
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Gly Phe Asp Ile Leu Leu Ser Cys Ile Ala Asp Leu Thr Ile
    2210                2215                2220


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<210> 6
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<400> 6
Gln Ile Val Leu Asp Thr Glu Thr Thr Gly Met Asn
 1               5                  10


<210> 7
<211> 12
<212> PRT
<213> Salmonella typhimurium

<400> 7
Gln Ile Val Leu Asp Thr Glu Thr Thr Gly Met Asn
 1               5                  10


<210> 8
<211> 12
<212> PRT
<213> Vibrio cholerae

<400> 8
Ile Val Val Leu Asp Thr Glu Thr Thr Gly Met Asn
 1               5                  10


<210> 9
<211> 12
<212> PRT
<213> Pseudomonas aeruginosa

<400> 9
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 1               5                  10
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<210> 10
<211> 12
<212> PRT
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<210> 11
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<213> Chlamydia trachomatis

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Phe Val Cys Leu Asp Cys Glu Thr Thr Gly Leu Asp
 1               5                   10


<210> 12
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<400> 12
Leu Ala Ala Phe Asp Thr Glu Thr Thr Gly Val Asp
 1               5                   10


<210> 13
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<212> PRT
<213> Shigella flexneri 2a str. 301

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 1               5                   10


<210> 14
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Tyr Val Val Phe Asp Val Glu Thr Thr Gly Leu Ser
 1               5                   10


<210> 15
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<212> PRT
<213> Bacillus subtilis
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 1               5                   10


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<212> PRT
<213> Mycoplasma pulmonis

<400> 16
Tyr Val Val Tyr Asp Ile Glu Thr Thr Gly Leu Ser
 1               5                   10


<210> 17
<211> 12
<212> PRT
<213> Mycoplasma genitalium

<400> 17
Phe Val Ile Phe Asp Ile Glu Thr Thr Gly Leu His
 1               5                   10


<210> 18
<211> 12
<212> PRT
<213> Mycoplasma pneumoniae

<400> 18
Phe Val Ile Phe Asp Ile Glu Thr Thr Gly Leu His
 1               5                   10


<210> 19
<211> 12
<212> PRT
<213> Saccharomyces cerevisiae

<400> 19
Ile Met Ser Phe Asp Ile Glu Cys Ala Gly Arg Ile
 1               5                   10


<210> 20
<211> 12
<212> PRT
<213> Saccharomyces cerevisiae

<400> 20
Val Met Ala Phe Asp Ile Glu Thr Thr Lys Pro Pro
 1               5                   10
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<210> 21
<211> 12
<212> PRT
<213> Mus musculus

<400> 21
Val Leu Ser Phe Asp Ile Glu Cys Ala Gly Arg Lys
 1               5                   10


<210> 22
<211> 12
<212> PRT
<213> Mus musculus

<400> 22
Val Leu Ala Phe Asp Ile Glu Thr Thr Lys Leu Pro
 1               5                   10


<210> 23
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<212> PRT
<213> Homo sapiens

<400> 23
Val Leu Ser Phe Asp Ile Glu Cys Ala Gly Arg Lys
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<210> 24
<211> 12
<212> PRT
<213> Homo sapiens

<400> 24
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 1               5                   10


<210> 25
<211> 12
<212> PRT
<213> Oryza sativa

<400> 25
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<210> 26
<211> 12
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<212> PRT
<213> Arabidopsis thaliana

<400> 26
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<210> 27
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<212> PRT
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<400> 27
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<210> 28
<211> 12
<212> PRT
<213> Rattus norvegicus

<400> 28
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<210> 29
<211> 12
<212> PRT
<213> Bos taurus

<400> 29
Val Leu Ser Phe Asp Ile Glu Cys Ala Gly Arg Lys
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<210> 30
<211> 12
<212> PRT
<213> Glycine max

<400> 30
Ile Leu Ser Phe Asp Ile Glu Cys Ala Gly Arg Lys
 1               5                  10


<210> 31
<211> 12
<212> PRT
<213> Drosophila melanogaster

<400> 31
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 1               5                   10


<210> 32
<211> 12
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<213> Drosophila melanogaster

<400> 32
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<210> 33
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<213> Artificial Sequence

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<210> 34
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Mutated pol delta

<400> 34
Ile Met Ser Phe Ala Ile Ala Cys Ala Gly Arg Ile
 1               5                   10


<210> 35
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Mutated pol epsilon

<400> 35
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<210> 36
<211> 12
<212> PRT
<213> Artificial Sequence
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<220>
<223> Mutated pol epsilon

<400> 36
Val Met Ala Phe Ala Ile Ala Thr Thr Lys Pro Pro
 1               5                  10


<210> 37
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 37
cccgagctca tgagtgaaaa aagatccctt                                    30

<210> 38
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<220>
<223> primer

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<210> 40
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<220>
<223> primer

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<211> 1592
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<212> DNA
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ggtattcaac cgactgaact accgctccgc gttgtgttcc gttgggaacg aggcgaatag 180
ttacgaattg cctcgacctc gtcaacggtt tttctatctt ttgaatcgtt tgctgcaaaa 240
atcgcccaag tcgctatttt tagcgccttt cacaggtatt tatgctcgcc agaggcaact 300
tccgcctttc ttctgcacca gatcgagacg ggcttcatga gctgcaatct cttcatctgt 360
cgcaaaaaca acgcgtaact tacttgcctg acgtacaatg cgctgaattg ttgcttcacc 420
ttgttgctgt tgtgtctctc cttccatcgc aaaagccatc gacgtttgac caccggtcat 480
cgccagataa acttccgcaa ggatctgggc atcgagtaat gccccgtgca gcgttcgttt 540
actgttatct atttcgtagc gagcacataa cgcatcgagg ctgttgcgct taccgggaaa 600
cattttcctc gccaccgcaa ggctatcggt gaccttacag aaagtattgg tcttcggaat 660
atcgcgctta agcaacgaaa actcgtagtc cataaagccg atatcgaacg ctgcgttatg 720
gatcaccaac tccgcgccgc gaatatagtc catgaactca tcggctactt cggcaaacgt 780
gggcttatcg agcaaaaatt catcggcaat accatgtacg ccaaaggctt ccggatccac 840
cagccgatcg ggtttgagat aaacatggaa gttattgccc gtcaggcgac ggttcaccac 900
ttcaacggca ccaatctcaa tgatcttgtg gccttcatag tgcgcaccaa tctggttcat 960
accggtggtt tcggtatcga gaacgatctg gcgtgtaatt gcagtgctca tagcggtcat 1020
ttatgtcaga cttgtcgttt tacagttcga ttcaattaca ggaagtctac cagagatgct 1080
taaacaggta gaaattttca ccgatggttc gtgtctgggc aatccaggac ctggggggtta 1140
cggcgctatt ttacgctatc gcggacgcga gaaaaccttt agcgctggct acacccgcac 1200
caccaacaac cgtatggagt tgatggccgc tattgtcgcg ctggaggcgt taaaagaaca 1260
ttgcgaagtc attttgagta ccgacagcca gtatgtccgc cagggtatca cccagtggat 1320
ccataactgg aaaaaacgtg gctggaaaac cgcagacaaa aaaccagtaa aaaatgtcga 1380
tctctggcaa cgtcttgatg ctgcattggg gcagcatcaa atcaaatggg aatgggttaa 1440
aggccatgcc ggacacccgg aaaacgaacg ctgtgatgaa ctggctcgtg ccgcggcgat 1500
gaatcccaca ctggaagata caggctacca agttgaagtt taagcctgtg gtttacgaca 1560
ttgccgggtg gctccaaccg cctagcgaat tc                               1592

<210> 42
<211> 243
<212> PRT
<213> Escherichia coli

<400> 42
Met Ser Thr Ala Ile Thr Arg Gln Ile Val Leu Asp Thr Glu Thr Thr
 1              5                   10                  15
Gly Met Asn Gln Ile Gly Ala His Tyr Glu Gly His Lys Ile Ile Glu
            20                  25                  30
Ile Gly Ala Val Glu Val Val Asn Arg Arg Leu Thr Gly Asn Asn Phe
        35                  40                  45
His Val Tyr Leu Lys Pro Asp Arg Leu Val Asp Pro Glu Ala Phe Gly
    50                  55                  60
Val His Gly Ile Ala Asp Glu Phe Leu Leu Asp Lys Pro Thr Phe Ala
65                  70                  75                  80
Glu Val Ala Asp Glu Phe Met Asp Tyr Ile Arg Gly Ala Glu Leu Val
                85                  90                  95
Ile His Asn Ala Ala Phe Asp Ile Gly Phe Met Asp Tyr Glu Phe Ser
            100                 105                 110
Leu Leu Lys Arg Asp Ile Pro Lys Thr Asn Thr Phe Cys Lys Val Thr
        115                 120                 125
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Asp Ser Leu Ala Val Ala Arg Lys Met Phe Pro Gly Lys Arg Asn Ser
    130                 135                 140
Leu Asp Ala Leu Cys Ala Arg Tyr Glu Ile Asp Asn Ser Lys Arg Thr
145                 150                 155                 160
Leu His Gly Ala Leu Leu Asp Ala Gln Ile Leu Ala Glu Val Tyr Leu
                165                 170                 175
Ala Met Thr Gly Gly Gln Thr Ser Met Ala Phe Ala Met Glu Gly Glu
            180                 185                 190
Thr Gln Gln Gln Gln Gly Glu Ala Thr Ile Gln Arg Ile Val Arg Gln
        195                 200                 205
Ala Ser Lys Leu Arg Val Val Phe Ala Thr Asp Glu Glu Ile Ala Ala
    210                 215                 220
His Glu Ala Arg Leu Asp Leu Val Gln Lys Lys Gly Gly Ser Cys Leu
225                 230                 235                 240
Trp Arg Ala



<210> 43
<211> 4866
<212> DNA
<213> Bacillus subtilis

<400> 43
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atgacatact ttgaacatgg cgagattaaa aagctgacaa ttcacaaagc ttctaagtct 180
tggcattttc attttcaatt taaatctttg ctgccttttc aaatatatga cacattaaca 240
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gatgccgagg tcagtgaaag tatcgttcaa gactactggt cacgctgcat tgaagaactg 360
cagggcattt cgccgccgat tatcagtctt ttaaaccagc aaaaaccgaa gctgaagggc 420
aataaactga ttgtcaaaac caaaacagat acagaagcgg ctgcgctaaa gaacaaatac 480
agttccatga ttcaagcaga ataccgtcaa tttggctttc cggatcttca gcttgatgct 540
gaaatatttg tatccgagca agaagttcaa aagtttcggg agcaaaagct tgcggaagac 600
caagagcggg ctatgcaggc cttgattgaa atggagaaga aagataaaga aagtgatgaa 660
gaccaagcac catctggtcc tcttgttatc ggttatcaaa ttaaagataa cgaggaaatc 720
cgaacacttg acagcatcat ggacgaagaa cggagaatta cggtccaagg ttatgtgttt 780
gatgtggaga cgcgcgagct gaagagcggg cgcacgctgt gtatcttcaa aattacagac 840
tatacaaata gtattttgat caaaatgttt gcacgtgaaa aagaagatgc ggcgctgatg 900
aagtctctga aaaaaggaat gtgggtaaaa gcacgcggaa gcattcaaaa tgatacattt 960
gtcagagacc ttgtcatgat cgcaaatgac gtaaacgaaa taaaagcaaa aacccgtgaa 1020
gattcagcac ctgaaggaga aaaaagagtg gaattgcatc ttcattcccc aatgagccaa 1080
atggatgctg ttacgggtat cggaaagctt gtcgaacagg cgaaaaaatg ggggcatgag 1140
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aaaaagcatg gaattaaaat gatttacggg atggaagcga atctcgtgga tgatggcgtg 1260
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gttgagacga caggattgtc tgctgtatac gataccatta ttgagctggc tgcagtaaaa 1380
gtaaaaggcg gagaaattat tgataaattt gaggcgtttg cgaacccgca tcgtccgctt 1440
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gtcgtagatg taataagaga tttcagagaa tggattggcg atgatattct tgtcgctcat 1560
aatgcaagct ttgatatggg attcttaaat gtagcctata aaaaacttct tgaagtcgaa 1620
aaagctaaaa acccagtcat tgatacgctt gaacttggac gttttctcta tccggaattt 1680
aagaaccacc ggttgaacac actttgtaaa aagtttgata tcgagctcac acagcatcac 1740
cgtgcgatct atgatactga ggcaaccgct tatttgcttc tgaaaatgct gaaagacgca 1800
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aatttattta agcttgtgtc actttctcat attcattatt tttacagagt gccgcgtatt 1980
ccgagatctc agcttgagaa atacagggaa gggcttctga tcggttctgc ttgtgacagg 2040
ggagaggttt ttgagggaat gatgcaaaaa tcgcctgaag aggtggaaga tatcgcgtca 2100
ttctatgatt accttgaggt tcagccgcct gaagtgtatc gtcacttgct ggagcttgaa 2160
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atctacagaa agattttaat atcctcacaa ggcggggcaa atccgctgaa taggcatgaa 2340
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gacatcaagc cgattaaaga tgatttatat acgccgaaaa tcgaaggcgc tgatgaagag 2520
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cttggaattc ctgaattcgg aacccgattt gtccggcaga tgcttgaaga tacaaagccg 3540
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aagctt                                                            4866
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<210> 44

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<211> 1437
<212> PRT
<213> Bacillus subtilis

<400> 44
Met Glu Gln Leu Ser Val Asn Arg Arg Gln Phe Gln Ile Leu Leu Gln
 1              5                   10                  15
Gln Ile Asn Met Thr Asp Asp Thr Phe Met Thr Tyr Phe Glu His Gly
            20                  25                  30
Glu Ile Lys Lys Leu Thr Ile His Lys Ala Ser Lys Ser Trp His Phe
        35                  40                  45
His Phe Gln Phe Lys Ser Leu Leu Pro Phe Gln Ile Tyr Asp Thr Leu
    50                  55                  60
Thr Thr Arg Leu Thr Gln Ser Phe Ala His Ile Ala Lys Val Thr Ser
65                  70                  75                  80
Ser Ile Glu Val Gln Asp Ala Glu Val Ser Glu Ser Ile Val Gln Asp
                85                  90                  95
Tyr Trp Ser Arg Cys Ile Glu Glu Leu Gln Gly Ile Ser Pro Pro Ile
            100                 105                 110
Ile Ser Leu Leu Asn Gln Gln Lys Pro Lys Leu Lys Gly Asn Lys Leu
        115                 120                 125
Ile Val Lys Thr Lys Thr Asp Thr Glu Ala Ala Ala Leu Lys Asn Lys
    130                 135                 140
Tyr Ser Ser Met Ile Gln Ala Glu Tyr Arg Gln Phe Gly Phe Pro Asp
145                 150                 155                 160
Leu Gln Leu Asp Ala Glu Ile Phe Val Ser Glu Gln Glu Val Gln Lys
                165                 170                 175
Phe Arg Glu Gln Lys Leu Ala Glu Asp Gln Glu Arg Ala Met Gln Ala
            180                 185                 190
Leu Ile Glu Met Glu Lys Lys Asp Lys Glu Ser Asp Glu Asp Gln Ala
        195                 200                 205
Pro Ser Gly Pro Leu Val Ile Gly Tyr Gln Ile Lys Asp Asn Glu Glu
    210                 215                 220
Ile Arg Thr Leu Asp Ser Ile Met Asp Glu Glu Arg Arg Ile Thr Val
225                 230                 235                 240
Gln Gly Tyr Val Phe Asp Val Glu Thr Arg Glu Leu Lys Ser Gly Arg
                245                 250                 255
Thr Leu Cys Ile Phe Lys Ile Thr Asp Tyr Thr Asn Ser Ile Leu Ile
            260                 265                 270
Lys Met Phe Ala Arg Glu Lys Glu Asp Ala Ala Leu Met Lys Ser Leu
        275                 280                 285
Lys Lys Gly Met Trp Val Lys Ala Arg Gly Ser Ile Gln Asn Asp Thr
    290                 295                 300
Phe Val Arg Asp Leu Val Met Ile Ala Asn Asp Val Asn Glu Ile Lys
305                 310                 315                 320
Ala Lys Thr Arg Glu Asp Ser Ala Pro Glu Gly Glu Lys Arg Val Glu
                325                 330                 335
Leu His Leu His Ser Pro Met Ser Gln Met Asp Ala Val Thr Gly Ile
            340                 345                 350
Gly Lys Leu Val Glu Gln Ala Lys Lys Trp Gly His Glu Ala Ile Ala
        355                 360                 365
Leu Thr Asp His Ala Val Val Gln Ser Phe Pro Asp Ala Tyr Ser Ala
    370                 375                 380
Ala Lys Lys His Gly Ile Lys Met Ile Tyr Gly Met Glu Ala Asn Leu
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385                 390                 395                 400
Val Asp Asp Gly Val Pro Ile Ala Tyr Asn Ala Ala His Arg Leu Leu
                405                 410                 415
Glu Glu Glu Thr Tyr Val Val Phe Asp Val Glu Thr Thr Gly Leu Ser
            420                 425                 430
Ala Val Tyr Asp Thr Ile Ile Glu Leu Ala Ala Val Lys Val Lys Gly
        435                 440                 445
Gly Glu Ile Ile Asp Lys Phe Glu Ala Phe Ala Asn Pro His Arg Pro
    450                 455                 460
Leu Ser Ala Thr Ile Ile Glu Leu Thr Gly Ile Thr Asp Asp Met Leu
465                 470                 475                 480
Gln Asp Ala Pro Asp Val Val Asp Val Ile Arg Asp Phe Arg Glu Trp
                485                 490                 495
Ile Gly Asp Asp Ile Leu Val Ala His Asn Ala Ser Phe Asp Met Gly
            500                 505                 510
Phe Leu Asn Val Ala Tyr Lys Lys Leu Leu Glu Val Glu Lys Ala Lys
        515                 520                 525
Asn Pro Val Ile Asp Thr Leu Glu Leu Gly Arg Phe Leu Tyr Pro Glu
    530                 535                 540
Phe Lys Asn His Arg Leu Asn Thr Leu Cys Lys Lys Phe Asp Ile Glu
545                 550                 555                 560
Leu Thr Gln His His Arg Ala Ile Tyr Asp Thr Glu Ala Thr Ala Tyr
                565                 570                 575
Leu Leu Leu Lys Met Leu Lys Asp Ala Ala Glu Lys Gly Ile Gln Tyr
            580                 585                 590
His Asp Glu Leu Asn Glu Asn Met Gly Gln Ser Asn Ala Tyr Gln Arg
        595                 600                 605
Ser Arg Pro Tyr His Ala Thr Leu Leu Ala Val Asn Ser Thr Gly Leu
    610                 615                 620
Lys Asn Leu Phe Lys Leu Val Ser Leu Ser His Ile His Tyr Phe Tyr
625                 630                 635                 640
Arg Val Pro Arg Ile Pro Arg Ser Gln Leu Glu Lys Tyr Arg Glu Gly
                645                 650                 655
Leu Leu Ile Gly Ser Ala Cys Asp Arg Gly Glu Val Phe Glu Gly Met
            660                 665                 670
Met Gln Lys Ser Pro Glu Glu Val Glu Asp Ile Ala Ser Phe Tyr Asp
        675                 680                 685
Tyr Leu Glu Val Gln Pro Pro Glu Val Tyr Arg His Leu Leu Glu Leu
    690                 695                 700
Glu Leu Val Arg Asp Glu Lys Ala Leu Lys Glu Ile Ile Ala Asn Ile
705                 710                 715                 720
Thr Lys Leu Gly Glu Lys Leu Asn Lys Pro Val Val Ala Thr Gly Asn
                725                 730                 735
Val His Tyr Leu Asn Asp Glu Asp Lys Ile Tyr Arg Lys Ile Leu Ile
            740                 745                 750
Ser Ser Gln Gly Gly Ala Asn Pro Leu Asn Arg His Glu Leu Pro Lys
        755                 760                 765
Val His Phe Arg Thr Thr Asp Glu Met Leu Glu Ala Phe Ser Phe Leu
    770                 775                 780
Gly Glu Glu Lys Ala Lys Glu Ile Val Val Thr Asn Thr Gln Lys Val
785                 790                 795                 800
Ala Ser Leu Val Asp Asp Ile Lys Pro Ile Lys Asp Asp Leu Tyr Thr
                805                 810                 815
Pro Lys Ile Glu Gly Ala Asp Glu Glu Ile Arg Glu Met Ser Tyr Gln
```

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            820                 825                 830
Arg Ala Arg Ser Ile Tyr Gly Glu Glu Leu Pro Glu Ile Val Glu Ala
        835                 840                 845
Arg Ile Glu Lys Glu Leu Lys Ser Ile Ile Gly His Gly Phe Ala Val
    850                 855                 860
Ile Tyr Leu Ile Ser His Lys Leu Val Lys Arg Ser Leu Asp Asp Gly
865                 870                 875                 880
Tyr Leu Val Gly Ser Arg Gly Ser Val Gly Ser Ser Leu Val Ala Thr
                885                 890                 895
Leu Thr Glu Ile Thr Glu Val Asn Pro Leu Pro Pro His Tyr Val Cys
            900                 905                 910
Pro Glu Cys Gln His Ser Glu Phe Phe Asn Asp Gly Ser Val Gly Ser
        915                 920                 925
Gly Phe Asp Leu Pro Asp Lys Thr Cys Pro His Cys Gly Thr Pro Leu
    930                 935                 940
Lys Lys Asp Gly His Asp Ile Pro Phe Glu Thr Phe Leu Gly Phe Lys
945                 950                 955                 960
Gly Asp Lys Val Pro Asp Ile Asp Leu Asn Phe Ser Gly Glu Tyr Gln
                965                 970                 975
Pro Gln Ala His Asn Tyr Thr Lys Val Leu Phe Gly Glu Asp Asn Val
            980                 985                 990
Tyr Arg Ala Gly Thr Ile Gly Thr Val Ala Glu Lys Thr Ala Tyr Gly
        995                 1000                1005
Tyr Val Lys Gly Tyr Ala Gly Asp Asn Asn Leu His Met Arg Gly Ala
    1010                1015                1020
Glu Ile Asp Arg Leu Val Gln Gly Cys Thr Gly Val Lys Arg Thr Thr
1025                1030                1035                1040
Gly Gln His Pro Gly Gly Ile Ile Val Val Pro Asp Tyr Met Asp Ile
                1045                1050                1055
Tyr Asp Phe Ser Pro Ile Gln Phe Pro Ala Asp Ala Thr Gly Ser Glu
            1060                1065                1070
Trp Lys Thr Thr His Phe Asp Phe His Ser Ile His Asp Asn Leu Leu
        1075                1080                1085
Lys Leu Asp Ile Leu Gly His Asp Asp Pro Thr Val Ile Arg Met Leu
    1090                1095                1100
Gln Asp Leu Ser Gly Ile Asp Pro Lys Thr Ile Pro Thr Asp Asp Pro
1105                1110                1115                1120
Glu Val Met Lys Ile Phe Gln Gly Thr Glu Ser Leu Gly Val Thr Glu
                1125                1130                1135
Glu Gln Ile Gly Cys Lys Thr Gly Thr Leu Gly Ile Pro Glu Phe Gly
            1140                1145                1150
Thr Arg Phe Val Arg Gln Met Leu Glu Asp Thr Lys Pro Thr Thr Phe
        1155                1160                1165
Ser Glu Leu Val Gln Ile Ser Gly Leu Ser His Gly Thr Asp Val Trp
    1170                1175                1180
Leu Gly Asn Ala Gln Glu Leu Ile His Asn Asn Ile Cys Glu Leu Ser
1185                1190                1195                1200
Glu Val Ile Gly Cys Arg Asp Asp Ile Met Val Tyr Leu Ile Tyr Gln
                1205                1210                1215
Gly Leu Glu Pro Ser Leu Ala Phe Lys Ile Met Glu Phe Val Arg Lys
            1220                1225                1230
Gly Lys Gly Leu Thr Pro Glu Trp Glu Glu Glu Met Lys Asn Asn Asn
        1235                1240                1245
Val Pro Asp Trp Tyr Ile Asp Ser Cys Lys Lys Ile Lys Tyr Met Phe
```

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    1250                1255                1260
Pro Lys Ala His Ala Ala Ala Tyr Val Leu Met Ala Val Arg Ile Ala
1265                1270                1275                1280
Tyr Phe Lys Val His His Ala Leu Leu Tyr Tyr Ala Ala Tyr Phe Thr
                1285                1290                1295
Val Arg Ala Asp Asp Phe Asp Ile Asp Thr Met Ile Lys Gly Ser Thr
            1300                1305                1310
Ala Ile Arg Ala Val Met Glu Asp Ile Asn Ala Lys Gly Leu Asp Ala
        1315                1320                1325
Ser Pro Lys Glu Lys Asn Leu Leu Thr Val Leu Glu Leu Ala Leu Glu
    1330                1335                1340
Met Cys Glu Arg Gly Tyr Ser Phe Gln Lys Val Asp Leu Tyr Arg Ser
1345                1350                1355                1360
Ser Ala Thr Glu Phe Ile Ile Asp Gly Asn Ser Leu Ile Pro Pro Phe
                1365                1370                1375
Asn Ser Ile Pro Gly Leu Gly Thr Asn Ala Ala Leu Asn Ile Val Lys
            1380                1385                1390
Ala Arg Glu Glu Gly Glu Phe Leu Ser Lys Glu Asp Leu Gln Lys Arg
        1395                1400                1405
Gly Lys Val Ser Lys Thr Ile Leu Glu Tyr Leu Asp Arg His Gly Cys
    1410                1415                1420
Leu Glu Ser Leu Pro Asp Gln Asn Gln Leu Ser Leu Phe
1425                1430                1435


<210> 45
<211> 1081
<212> PRT
<213> Arabidopsis thaliana

<400> 45
Met Asn Arg Ser Gly Ile Ser Lys Lys Arg Pro Pro Pro Ser Asn Thr
 1               5                   10                  15
Pro Pro Pro Ala Gly Lys His Arg Ala Thr Gly Asp Ser Thr Pro Ser
            20                  25                  30
Pro Ala Ile Gly Thr Leu Asp Asp Glu Phe Met Met Glu Glu Asp Val
        35                  40                  45
Phe Leu Asp Glu Thr Leu Leu Tyr Gly Asp Glu Asp Glu Glu Ser Leu
    50                  55                  60
Ile Leu Arg Asp Ile Glu Glu Arg Glu Ser Arg Ser Ser Ala Trp Ala
65                  70                  75                  80
Arg Pro Pro Leu Ser Pro Ala Tyr Leu Ser Asn Ser Gln Ile Phe Gln
                85                  90                  95
Gln Leu Glu Ile Asp Ser Ile Ile Ala Glu Ser His Lys Glu Leu Leu
            100                 105                 110
Pro Gly Ser Ser Gly Gln Ala Pro Ile Ile Arg Met Phe Gly Val Thr
        115                 120                 125
Arg Glu Gly Asn Ser Val Cys Cys Phe Val His Gly Phe Glu Pro Tyr
    130                 135                 140
Phe Tyr Ile Ala Cys Pro Pro Gly Met Gly Pro Asp Asp Ile Ser Asn
145                 150                 155                 160
Phe His Gln Ser Leu Glu Gly Arg Met Arg Glu Ser Asn Lys Asn Ala
                165                 170                 175
Lys Val Pro Lys Phe Val Lys Arg Ile Glu Met Val Gln Lys Arg Ser
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```
            180                 185                 190
Ile Met Tyr Tyr Gln Gln Gln Lys Ser Gln Thr Phe Leu Lys Ile Thr
        195                 200                 205
Val Ala Leu Pro Thr Met Val Ala Ser Cys Arg Gly Ile Leu Asp Arg
    210                 215                 220
Gly Leu Gln Ile Asp Gly Leu Gly Met Lys Ser Phe Gln Thr Tyr Glu
225                 230                 235                 240
Ser Asn Ile Leu Phe Val Leu Arg Phe Met Val Asp Cys Asp Ile Val
                245                 250                 255
Gly Gly Asn Trp Ile Glu Val Pro Thr Gly Lys Tyr Lys Lys Asn Ala
            260                 265                 270
Arg Thr Leu Ser Tyr Cys Gln Leu Glu Phe His Cys Leu Tyr Ser Asp
        275                 280                 285
Leu Ile Ser His Ala Ala Glu Gly Glu Tyr Ser Lys Met Ala Pro Phe
    290                 295                 300
Arg Val Leu Ser Phe Asp Ile Glu Cys Ala Gly Arg Lys Gly His Phe
305                 310                 315                 320
Pro Glu Ala Lys His Asp Pro Val Ile Gln Ile Ala Asn Leu Val Thr
                325                 330                 335
Leu Gln Gly Glu Asp His Pro Phe Val Arg Asn Val Met Thr Leu Lys
            340                 345                 350
Ser Cys Ala Pro Ile Val Gly Val Asp Val Met Ser Phe Glu Thr Glu
        355                 360                 365
Arg Glu Val Leu Leu Ala Trp Arg Asp Leu Ile Arg Asp Val Asp Pro
    370                 375                 380
Asp Ile Ile Ile Gly Tyr Asn Ile Cys Lys Phe Asp Leu Pro Tyr Leu
385                 390                 395                 400
Ile Glu Arg Ala Ala Thr Leu Gly Ile Glu Glu Phe Pro Leu Leu Gly
                405                 410                 415
Arg Val Lys Asn Ser Arg Val Arg Val Arg Asp Ser Thr Phe Ser Ser
            420                 425                 430
Arg Gln Gln Gly Ile Arg Glu Ser Lys Glu Thr Thr Ile Glu Gly Arg
        435                 440                 445
Phe Gln Phe Asp Leu Ile Gln Ala Ile His Arg Asp His Lys Leu Ser
    450                 455                 460
Ser Tyr Ser Leu Asn Ser Val Ser Ala His Phe Leu Ser Glu Gln Lys
465                 470                 475                 480
Glu Asp Val His His Ser Ile Ile Thr Asp Leu Gln Asn Gly Asn Ala
                485                 490                 495
Glu Thr Arg Arg Arg Leu Ala Val Tyr Cys Leu Lys Asp Ala Tyr Leu
            500                 505                 510
Pro Gln Arg Leu Leu Asp Lys Leu Met Phe Ile Tyr Asn Tyr Val Glu
        515                 520                 525
Met Ala Arg Val Thr Gly Val Pro Ile Ser Phe Leu Leu Ala Arg Gly
    530                 535                 540
Gln Ser Ile Lys Val Leu Ser Gln Leu Leu Arg Lys Gly Lys Gln Lys
545                 550                 555                 560
Asn Leu Val Leu Pro Asn Ala Lys Gln Ser Gly Ser Glu Gln Gly Thr
                565                 570                 575
Tyr Glu Gly Ala Thr Val Leu Glu Ala Arg Thr Gly Phe Tyr Glu Lys
            580                 585                 590
Pro Ile Ala Thr Leu Asp Phe Ala Ser Leu Tyr Pro Ser Ile Met Met
        595                 600                 605
Ala Tyr Asn Leu Cys Tyr Cys Thr Leu Val Thr Pro Glu Asp Val Arg
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    610                 615                 620
Lys Leu Asn Leu Pro Pro Glu His Val Thr Lys Thr Pro Ser Gly Glu
625                 630                 635                 640
Thr Phe Val Lys Gln Thr Leu Gln Lys Gly Ile Leu Pro Glu Ile Leu
                645                 650                 655
Glu Glu Leu Leu Thr Ala Arg Lys Arg Ala Lys Ala Asp Leu Lys Glu
            660                 665                 670
Ala Lys Asp Pro Leu Glu Lys Ala Val Leu Asp Gly Arg Gln Leu Ala
        675                 680                 685
Leu Lys Ile Ser Ala Asn Ser Val Tyr Gly Phe Thr Gly Ala Thr Val
    690                 695                 700
Gly Gln Leu Pro Cys Leu Glu Ile Ser Ser Ser Val Thr Ser Tyr Gly
705                 710                 715                 720
Arg Gln Met Ile Glu Gln Thr Lys Lys Leu Val Glu Asp Lys Phe Thr
                725                 730                 735
Thr Leu Gly Gly Tyr Gln Tyr Asn Ala Glu Val Ile Tyr Gly Asp Thr
            740                 745                 750
Asp Ser Val Met Val Gln Phe Gly Val Ser Asp Val Glu Ala Ala Met
        755                 760                 765
Thr Leu Gly Arg Glu Ala Ala Glu His Ile Ser Gly Thr Phe Ile Lys
    770                 775                 780
Pro Ile Lys Leu Glu Phe Glu Lys Val Tyr Phe Pro Tyr Leu Leu Ile
785                 790                 795                 800
Asn Lys Lys Arg Tyr Ala Gly Leu Leu Trp Thr Asn Pro Gln Gln Phe
                805                 810                 815
Asp Lys Met Asp Thr Lys Gly Ile Glu Thr Val Arg Arg Asp Asn Cys
            820                 825                 830
Leu Leu Val Lys Asn Leu Val Thr Glu Ser Leu Asn Lys Ile Leu Ile
        835                 840                 845
Asp Arg Asp Val Pro Gly Ala Ala Glu Asn Val Lys Lys Thr Ile Ser
    850                 855                 860
Asp Leu Leu Met Asn Arg Ile Asp Leu Ser Leu Leu Val Ile Thr Lys
865                 870                 875                 880
Gly Leu Thr Lys Thr Gly Asp Asp Tyr Glu Val Lys Ser Ala His Gly
                885                 890                 895
Glu Leu Ala Glu Arg Met Arg Lys Arg Asp Ala Ala Thr Ala Pro Asn
            900                 905                 910
Val Gly Asp Arg Val Pro Tyr Val Ile Ile Lys Ala Ala Lys Gly Ala
        915                 920                 925
Lys Ala Tyr Glu Arg Ser Glu Asp Pro Ile Tyr Val Leu Gln Asn Asn
    930                 935                 940
Ile Pro Ile Asp Pro Asn Tyr Tyr Leu Glu Asn Gln Ile Ser Lys Pro
945                 950                 955                 960
Leu Leu Arg Ile Phe Glu Pro Val Leu Lys Asn Ala Ser Lys Glu Leu
                965                 970                 975
Leu His Gly Ser His Thr Arg Ser Ile Ser Ile Thr Thr Pro Ser Asn
            980                 985                 990
Ser Gly Ile Met Lys Phe Ala Lys Lys Gln Leu Ser Cys Val Gly Cys
        995                 1000                1005
Lys Val Pro Ile Arg Tyr Phe Val Gln Trp Asn Thr Met Arg Lys Leu
    1010                1015                1020
Gln Gly Lys Arg Ser Arg Val Ile Leu Gln Lys Arg Val Ser Arg Tyr
1025                1030                1035                1040
Ala Ala Trp Leu Ser Leu Lys Arg Phe Leu Gly Gly Cys Gly His Ser
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                1045                1050                1055
Ala Arg Ser Val Lys Ala Leu Phe Ile Lys Met Ser Cys Ala Pro Val
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Glu Ile Val Gln Tyr Phe Thr Gly Glu
        1075                1080


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Gly Glu Thr Arg Leu Gly Trp Leu Leu Thr Phe Ala Ser Ser Ser Trp
        35                  40                  45
Glu Asp Ala Asp Thr Gly Lys Thr Phe Ser Cys Val Asp Leu Phe Phe
    50                  55                  60
Val Thr Gln Asp Gly Ser Ser Phe Lys Thr Lys Tyr Lys Phe Arg Pro
65                  70                  75                  80
Tyr Leu Tyr Ala Ala Thr Lys Asp Asn Met Glu Leu Glu Val Glu Ala
                85                  90                  95
Tyr Leu Arg Arg Arg Tyr Glu Arg Gln Val Ala Asp Ile Gln Ile Val
            100                 105                 110
His Lys Glu Asp Leu Tyr Leu Lys Asn His Leu Ser Gly Leu Gln Lys
        115                 120                 125
Lys Tyr Leu Lys Val Ser Phe Asp Thr Val Gln Gln Leu Val Glu Val
    130                 135                 140
Lys Arg Asp Leu Leu His Ile Val Glu Arg Asn Leu Ala Lys Phe Asn
145                 150                 155                 160
Ala Leu Glu Ala Tyr Glu Ser Ile Leu Ser Gly Lys Arg Glu Gln Arg
                165                 170                 175
Pro Gln Asp Cys Leu Asp Ser Val Val Asp Leu Arg Glu Tyr Asp Val
            180                 185                 190
Pro Tyr His Val Arg Phe Ala Ile Asp Asn Asp Val Arg Ser Gly Gln
        195                 200                 205
Trp Tyr Asn Val Ser Ile Ser Ser Thr Asp Val Ile Leu Glu Lys Arg
    210                 215                 220
Thr Asp Leu Leu Gln Arg Ala Glu Val Arg Val Cys Ala Phe Asp Ile
225                 230                 235                 240
Glu Thr Val Lys Leu Pro Leu Lys Phe Pro Asp Ala Glu Tyr Asp Gln
                245                 250                 255
Ile Met Met Ile Ser Tyr Met Val Asp Gly Gln Gly Phe Leu Ile Thr
            260                 265                 270
Asn Arg Glu Cys Val Gly Lys Asp Ile Glu Asp Leu Glu Tyr Thr Pro
        275                 280                 285
Lys Pro Glu Phe Glu Gly Tyr Phe Lys Val Thr Asn Val Thr Asn Glu
    290                 295                 300
Val Glu Leu Leu Arg Lys Trp Phe Ser His Met Gln Glu Leu Lys Pro
305                 310                 315                 320
Gly Ile Tyr Val Thr Tyr Asn Gly Asp Phe Phe Asp Trp Pro Phe Ile
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                325                 330                 335
Glu Arg Arg Ala Ser His His Gly Ile Lys Met Asn Glu Glu Leu Gly
            340                 345                 350
Phe Arg Cys Asp Gln Asn Gln Gly Glu Cys Arg Ala Lys Phe Val Cys
        355                 360                 365
His Leu Asp Cys Phe Ser Trp Val Lys Arg Asp Ser Tyr Leu Pro Gln
    370                 375                 380
Gly Ser Gln Gly Leu Lys Ala Val Thr Lys Val Lys Leu Gly Tyr Asp
385                 390                 395                 400
Pro Leu Glu Val Asn Pro Glu Asp Met Val Arg Phe Ala Met Glu Lys
                405                 410                 415
Pro Gln Thr Met Ala Ser Tyr Ser Val Ser Asp Ala Val Ala Thr Tyr
            420                 425                 430
Tyr Leu Tyr Met Thr Tyr Val His Pro Phe Val Phe Ser Leu Ala Thr
        435                 440                 445
Ile Ile Pro Met Val Pro Asp Glu Val Leu Arg Lys Gly Ser Gly Thr
    450                 455                 460
Leu Cys Glu Met Leu Leu Met Val Glu Ala Tyr Lys Ala Asn Val Val
465                 470                 475                 480
Cys Pro Asn Lys Asn Gln Ala Asp Pro Glu Lys Phe Tyr Gln Gly Lys
                485                 490                 495
Leu Leu Glu Ser Glu Thr Tyr Ile Gly Gly His Val Glu Cys Leu Gln
            500                 505                 510
Ser Gly Val Phe Arg Ser Asp Ile Pro Thr Ser Phe Lys Leu Asp Ala
        515                 520                 525
Ser Ala Tyr Gln Gln Leu Ile Asp Asn Leu Gly Arg Asp Leu Glu Tyr
    530                 535                 540
Ala Ile Thr Val Glu Gly Lys Met Arg Met Asp Ser Val Ser Asn Phe
545                 550                 555                 560
Asp Glu Val Lys Glu Val Ile Arg Glu Lys Leu Glu Lys Leu Arg Asp
                565                 570                 575
Asp Pro Ile Arg Glu Glu Gly Pro Leu Ile Tyr His Leu Asp Val Ala
            580                 585                 590
Ala Met Tyr Pro Asn Ile Ile Leu Thr Asn Arg Leu Gln Pro Pro Ser
        595                 600                 605
Ile Val Thr Asp Glu Val Cys Thr Ala Cys Asp Phe Asn Gly Pro Glu
    610                 615                 620
Lys Thr Cys Leu Arg Lys Leu Glu Trp Val Trp Arg Gly Val Thr Phe
625                 630                 635                 640
Lys Gly Asn Lys Ser Glu Tyr Tyr His Leu Lys Lys Gln Ile Glu Ser
                645                 650                 655
Glu Ser Val Asp Ala Gly Ala Asn Met Gln Ser Ser Lys Pro Phe Leu
            660                 665                 670
Asp Leu Pro Lys Val Glu Gln Gln Ser Lys Leu Lys Glu Arg Leu Lys
        675                 680                 685
Lys Tyr Cys Gln Lys Ala Tyr Ser Arg Val Leu Asp Lys Pro Ile Thr
    690                 695                 700
Glu Val Arg Glu Ala Gly Ile Cys Met Arg Glu Asn Pro Phe Tyr Val
705                 710                 715                 720
Asp Thr Val Arg Ser Phe Arg Asp Arg Arg Tyr Glu Tyr Lys Thr Leu
                725                 730                 735
Asn Lys Val Trp Lys Gly Lys Leu Ser Glu Ala Lys Ala Ser Gly Asn
            740                 745                 750
Leu Ile Lys Ile Gln Glu Ala His Asp Met Val Val Val Tyr Asp Ser
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        755                 760                 765
Leu Gln Leu Ala His Lys Cys Ile Leu Asn Ser Phe Tyr Gly Tyr Val
    770                 775                 780
Met Arg Lys Gly Ala Arg Trp Tyr Ser Met Glu Met Ala Gly Val Val
785                 790                 795                 800
Thr Tyr Thr Gly Ala Lys Ile Ile Gln Asn Ala Arg Leu Leu Ile Glu
                805                 810                 815
Arg Ile Gly Lys Pro Leu Glu Leu Asp Thr Asp Gly Ile Trp Cys Ala
            820                 825                 830
Leu Pro Gly Ser Phe Pro Glu Asn Phe Thr Phe Lys Thr Ile Asp Met
        835                 840                 845
Lys Lys Phe Thr Ile Ser Tyr Pro Cys Val Ile Leu Asn Val Asp Val
    850                 855                 860
Ala Lys Asn Asn Ser Asn Asp Gln Tyr Gln Thr Leu Val Asp Pro Val
865                 870                 875                 880
Arg Lys Thr Tyr Asn Ser Arg Ser Glu Cys Ser Ile Glu Phe Glu Val
                885                 890                 895
Asp Gly Pro Tyr Lys Ala Met Ile Ile Pro Ala Ser Lys Glu Glu Gly
            900                 905                 910
Ile Leu Ile Lys Lys Arg Tyr Ala Val Phe Asn His Asp Gly Thr Ile
        915                 920                 925
Ala Glu Leu Lys Gly Phe Glu Met Lys Arg Arg Gly Glu Leu Lys Leu
    930                 935                 940
Ile Lys Val Phe Gln Ala Glu Leu Phe Asp Lys Phe Leu His Gly Ser
945                 950                 955                 960
Thr Leu Glu Glu Cys Tyr Ser Ala Val Ala Ala Val Ala Asn Arg Trp
                965                 970                 975
Leu Asp Leu Leu Glu Gly Gln Gly Lys Asp Ile Ala Asp Ser Glu Leu
            980                 985                 990
Leu Asp Tyr Ile Ser Glu Ser Ser Thr Met Ser Lys Ser Leu Ala Asp
        995                 1000                1005
Tyr Gly Gln Gln Lys Ser Cys Ala Val Thr Thr Ala Lys Arg Leu Ala
    1010                1015                1020
Asp Phe Leu Gly Asp Thr Met Val Lys Asp Lys Gly Leu Arg Cys Gln
1025                1030                1035                1040
Tyr Ile Val Ala Arg Glu Pro Glu Gly Thr Pro Val Ser Glu Arg Ala
                1045                1050                1055
Val Pro Val Ala Ile Phe Gln Thr Asp Asp Pro Glu Lys Lys Phe Tyr
            1060                1065                1070
Leu Gln Lys Trp Cys Lys Ile Ser Ser Tyr Thr Gly Ile Arg Ser Ile
        1075                1080                1085
Ile Asp Trp Met Tyr Tyr Lys Gln Arg Leu His Ser Ala Ile Gln Lys
    1090                1095                1100
Val Ile Thr Ile Pro Ala Ala Met Gln Lys Val Ala Asn Pro Val Leu
1105                1110                1115                1120
Arg Val Arg His Pro Tyr Trp Leu Glu Lys Lys Val Cys Asp Lys Phe
                1125                1130                1135
Arg Gln Gly Lys Ile Val Asp Met Phe Ser Ser Ala Asn Lys Asp His
            1140                1145                1150
Ser Thr Thr Gln Asp Asn Val Val Ala Asp Ile Glu Glu Phe Cys Lys
        1155                1160                1165
Glu Asn Arg Pro Ser Val Lys Gly Pro Lys Pro Val Ala Arg Ser Phe
    1170                1175                1180
Glu Val Asp Arg Asn His Ser Glu Gly Lys Gln Gln Glu Ser Trp Asp
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Pro Glu Phe His Asp Ile Ser Leu Gln Asn Val Asp Lys Asn Val Asp
                1205                1210                1215
Tyr Gln Gly Trp Leu Glu Leu Glu Lys Arg Lys Trp Lys Met Thr Leu
            1220                1225                1230
Thr Asn Lys Lys Lys Arg Arg Phe Asp Asp Leu Lys Pro Cys Asn Gln
        1235                1240                1245
Ile Asp Ala His Lys Ile Asn Lys Lys Val Cys Lys Gly Arg Val Gly
    1250                1255                1260
Val Gly Ser Tyr Phe Arg Arg Pro Glu Glu Ala Leu Thr Ser Ser Tyr
1265                1270                1275                1280
Leu Gln Ile Ile Gln Leu Val Gln Ser Pro Gln Ser Gly Gln Phe Phe
                1285                1290                1295
Ala Trp Val Val Val Glu Gly Leu Met Leu Lys Ile Pro Leu Thr Ile
            1300                1305                1310
Pro Arg Val Phe Tyr Ile Asn Ser Lys Ala Ser Ile Ala Gly Asn Phe
        1315                1320                1325
Thr Gly Lys Cys Ile Asn Lys Ile Leu Pro His Gly Lys Pro Cys Tyr
    1330                1335                1340
Asn Leu Met Glu Ala Arg His Leu His Asn Thr His Ile Leu Leu Leu
1345                1350                1355                1360
Val Asn Ile Gln Glu Asp Gln Phe Ile Lys Glu Ser Lys Lys Leu Ala
                1365                1370                1375
Ala Leu Leu Ala Asp Pro Glu Ile Glu Gly Ile Tyr Glu Thr Lys Met
            1380                1385                1390
Pro Leu Glu Phe Ser Ala Ile Cys Gln Ile Gly Cys Val Cys Lys Ile
        1395                1400                1405
Glu Asp Thr Ala Lys His Arg Asn Thr Gln Asp Gly Trp Lys Leu Gly
    1410                1415                1420
Glu Leu His Arg Ile Thr Thr Thr Glu Cys Arg Tyr Leu Glu Asn Ser
1425                1430                1435                1440
Ile Pro Leu Val Tyr Leu Tyr His Ser Thr Ser Thr Gly Arg Ala Val
                1445                1450                1455
Tyr Val Leu Tyr Cys His Ala Ser Lys Leu Met Ser Val Val Val Val
            1460                1465                1470
Asn Pro Tyr Gly Asp Lys Glu Leu Leu Ser Ser Ala Leu Glu Arg Gln
        1475                1480                1485
Phe Arg Asp Arg Cys Gln Glu Leu Ser Pro Glu Pro Phe Ser Trp Asp
    1490                1495                1500
Gly Ile Leu Phe Gln Val Glu Tyr Val Asp His Pro Glu Ala Ala Thr
1505                1510                1515                1520
Lys Phe Leu Gln Lys Ala Leu Cys Glu Tyr Arg Glu Glu Asn Cys Gly
                1525                1530                1535
Ala Thr Val Ala Val Ile Glu Cys Pro Asp Phe Asn Thr Thr Lys Glu
            1540                1545                1550
Gly Val Lys Ala Leu Glu Asp Phe Pro Cys Val Arg Ile Pro Phe Asn
        1555                1560                1565
Asp Asp Asp Asn Ser Tyr Gln Pro Val Ser Trp Gln Arg Pro Ala Ala
    1570                1575                1580
Lys Ile Ala Val Leu Arg Cys Ala Ser Ala Ile Gln Trp Leu Asp Arg
1585                1590                1595                1600
Arg Ile Ala Gln Ser Arg Tyr Ala His Val Pro Leu Gly Asn Phe Gly
                1605                1610                1615
Arg Asp Trp Leu Thr Phe Thr Val Asp Ile Phe Leu Ser Arg Ala Leu
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Arg Asp Gln Gln Gln Val Leu Trp Val Ser Asp Asn Gly Val Pro Asp
        1635                1640                1645
Leu Gly Asp Ile Asn Asn Glu Glu Thr Phe Leu Ala Asp Glu Leu Gln
    1650                1655                1660
Glu Thr Ser Leu Leu Phe Pro Gly Ala Tyr Arg Lys Val Ser Val Glu
1665                1670                1675                1680
Leu Lys Val His Arg Leu Ala Val Asn Ala Leu Leu Lys Ser Asp Leu
                1685                1690                1695
Val Ser Glu Met Glu Gly Gly Gly Phe Leu Gly Val Asn Ser Arg Gly
            1700                1705                1710
Ser Ser Leu Asn Asp Asn Gly Ser Phe Asp Glu Asn Asn Gly Cys Ala
        1715                1720                1725
Gln Ala Phe Arg Val Leu Lys Gln Leu Ile Lys Arg Leu Leu His Asp
    1730                1735                1740
Ala Cys Asn Ser Gly Asn Ile Tyr Ala Asp Ser Ile Leu Gln His Leu
1745                1750                1755                1760
Ser Trp Trp Leu Arg Ser Pro Ser Ser Lys Leu His Asp Pro Ala Leu
                1765                1770                1775
His Leu Met Leu His Lys Val Met Gln Lys Val Phe Ala Leu Leu Leu
            1780                1785                1790
Thr Asp Leu Arg Arg Leu Gly Ala Ile Ile Ile Tyr Ala Asp Phe Ser
        1795                1800                1805
Lys Val Ile Ile Asp Thr Gly Lys Phe Asp Leu Ser Ala Ala Lys Thr
    1810                1815                1820
Tyr Cys Glu Ser Leu Leu Thr Val Met Gly Ser Arg Asp Ile Phe Lys
1825                1830                1835                1840
Leu Ile Leu Leu Glu Pro Val His Tyr Trp His Ser Leu Leu Phe Met
                1845                1850                1855
Asp Gln His Asn Tyr Ala Gly Ile Arg Ala Thr Gly Asp Glu Ile Ser
            1860                1865                1870
Gly Asn Glu Val Thr Ile Glu Pro Lys Trp Ser Val Ala Arg His Leu
        1875                1880                1885
Pro Glu Tyr Ile Gln Lys Asp Phe Ile Ile Ile Val Ala Thr Phe Ile
    1890                1895                1900
Phe Gly Pro Trp Lys Phe Ala Leu Glu Lys Lys Arg Gly Ser Ala Glu
1905                1910                1915                1920
Ser Leu Glu Ala Glu Met Val Glu Tyr Leu Lys Glu Gln Ile Gly Thr
                1925                1930                1935
Arg Phe Ile Ser Met Ile Val Glu Lys Ile Gly Asn Ile Arg Ser His
            1940                1945                1950
Ile Lys Asp Ile Asn Val Ser Asp Ala Ser Trp Ala Ser Gly Gln Ala
        1955                1960                1965
Pro Lys Gly Asp Tyr Thr Phe Glu Phe Ile Gln Ile Ile Thr Ala Val
    1970                1975                1980
Leu Ala Leu Asp Gln Asn Val Gln Gln Asp Val Leu Val Met Arg Lys
1985                1990                1995                2000
Ile Leu Leu Lys Tyr Ile Lys Val Lys Glu Cys Ala Ala Glu Ala Glu
                2005                2010                2015
Phe Ile Asp Pro Gly Pro Ser Phe Ile Leu Pro Asn Val Ala Cys Ser
            2020                2025                2030
Asn Cys Gly Ala Tyr Arg Asp Leu Asp Phe Cys Arg Asp Ser Ala Leu
        2035                2040                2045
Leu Thr Glu Lys Glu Trp Ser Cys Ala Asp Pro Gln Cys Val Lys Ile
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    2050                2055                2060
Tyr Asp Lys Glu Gln Ile Glu Ser Ser Ile Ile Gln Met Val Arg Gln
2065                2070                2075                2080
Arg Glu Arg Met Tyr Gln Leu Gln Asp Leu Val Cys Asn Arg Cys Asn
                2085                2090                2095
Gln Val Lys Ala Ala His Leu Thr Glu Gln Cys Glu Cys Ser Gly Ser
            2100                2105                2110
Phe Arg Cys Lys Glu Ser Gly Ser Asp Phe His Lys Arg Ile Glu Ile
        2115                2120                2125
Phe Leu Asp Ile Ala Lys Arg Gln Lys Phe Arg Leu Leu Glu Glu Cys
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Ile Ser Trp Ile Leu Phe Ala Thr Ser Cys
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<213> Oryza sativa

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<212> PRT
<213> Oryza sativa

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Gln Pro Pro Pro Pro Ala Ala Thr Ala Ala Ala Pro Val Ala Glu Glu
        35                  40                  45
Glu Asp Met Met Asp Glu Asp Val Phe Leu Asp Glu Thr Ile Leu Ala
    50                  55                  60
Glu Asp Glu Glu Ala Leu Leu Leu Leu Asp Arg Asp Glu Ala Leu Ala
65                  70                  75                  80
Ser Arg Leu Ser Arg Trp Arg Arg Pro Ala Leu Pro Ala Asp Leu Ala
                85                  90                  95
Ser Gly Cys Ser Arg Asn Val Ala Phe Gln Gln Leu Glu Ile Asp Tyr
            100                 105                 110
Val Ile Gly Glu Ser His Lys Val Leu Leu Pro Asn Ser Ser Gly Pro
        115                 120                 125
Ala Ala Ile Leu Arg Ile Phe Gly Val Thr Arg Glu Gly His Ser Val
    130                 135                 140
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Cys Cys Gln Val His Gly Phe Glu Pro Tyr Phe Tyr Ile Ser Cys Pro
145                 150                 155                 160
Met Gly Met Gly Pro Asp Asp Ile Ser Arg Phe His Gln Thr Leu Glu
                165                 170                 175
Gly Arg Met Lys Asp Ser Asn Arg Asn Ser Asn Val Pro Arg Phe Val
            180                 185                 190
Lys Arg Ile Glu Leu Val Gln Lys Gln Thr Ile Met His Tyr Gln Pro
        195                 200                 205
Gln Gln Ser Gln Pro Phe Leu Lys Ile Val Val Ala Leu Pro Thr Met
    210                 215                 220
Val Ala Ser Cys Arg Gly Ile Leu Glu Arg Gly Ile Thr Ile Glu Gly
225                 230                 235                 240
Leu Gly Ser Lys Ser Phe Leu Thr Tyr Glu Ser Asn Ile Leu Phe Ala
                245                 250                 255
Leu Arg Phe Met Ile Asp Cys Asn Ile Val Gly Gly Asn Trp Ile Glu
            260                 265                 270
Val Pro Ala Gly Lys Tyr Met Lys Ala Ala Arg Ile Met Ser Tyr Cys
        275                 280                 285
Gln Leu Glu Leu Asp Cys Leu Tyr Ser Asp Leu Val Ser His Ala Ala
    290                 295                 300
Glu Gly Glu His Ser Lys Met Ala Pro Phe Arg Ile Leu Ser Phe Asp
305                 310                 315                 320
Ile Glu Cys Ala Gly Arg Lys Gly His Phe Pro Glu Pro Thr His Asp
                325                 330                 335
Pro Val Ile Gln Ile Ala Asn Leu Val Thr Leu Gln Gly Glu Gly Gln
            340                 345                 350
Pro Phe Val Arg Asn Val Met Thr Leu Lys Ser Cys Ser Pro Ile Val
        355                 360                 365
Gly Val Asp Val Met Ser Phe Asp Thr Glu Arg Asp Val Leu Leu Ala
    370                 375                 380
Trp Arg Asp Phe Ile Arg Glu Val Asp Pro Asp Ile Ile Ile Gly Tyr
385                 390                 395                 400
Asn Ile Cys Lys Phe Asp Leu Pro Tyr Leu Ile Glu Arg Ala Glu Val
                405                 410                 415
Leu Lys Ile Val Glu Phe Pro Ile Leu Gly Arg Ile Arg Asn Ser Arg
            420                 425                 430
Val Arg Val Arg Asp Thr Thr Phe Ser Ser Arg Gln Tyr Gly Met Arg
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Glu Ser Lys Asp Val Ala Val Glu Gly Arg Val Gln Phe Asp Leu Leu
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Gln Ala Met Gln Arg Asp Tyr Lys Leu Ser Ser Tyr Ser Leu Asn Ser
465                 470                 475                 480
Val Ser Ala His Phe Leu Gly Glu Gln Lys Glu Asp Val His His Ser
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Ile Ile Ser Asp Leu Gln Asn Gly Asn Ser Glu Thr Arg Arg Arg Leu
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Ala Val Tyr Cys Leu Lys Asp Ala Tyr Leu Pro Gln Arg Leu Leu Asp
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Lys Leu Met Tyr Ile Tyr Asn Tyr Val Glu Met Ala Arg Val Thr Gly
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Val Pro Ile Ser Phe Leu Leu Ser Arg Gly Gln Ser Ile Lys Val Leu
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Ser Gln Leu Leu Arg Lys Ala Lys Gln Lys Asn Leu Val Ile Pro Asn
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Leu Glu Ala Arg Ala Gly Phe Tyr Glu Lys Pro Ile Ala Thr Leu Asp
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Phe Ala Ser Leu Tyr Pro Ser Ile Met Met Ala Tyr Asn Leu Cys Tyr
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Cys Thr Leu Val Pro Pro Glu Asp Ala Arg Lys Leu Asn Leu Pro Pro
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Glu Ser Val Asn Lys Thr Pro Ser Gly Glu Thr Phe Val Lys Pro Asp
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Val Gln Lys Gly Ile Leu Pro Glu Ile Leu Glu Glu Leu Leu Ala Ala
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Arg Lys Arg Ala Lys Ala Asp Leu Lys Glu Ala Lys Asp Pro Phe Glu
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Arg Ala Val Leu Asp Gly Arg Gln Leu Ala Leu Lys Ile Ser Ala Asn
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Ser Val Tyr Gly Phe Thr Gly Ala Thr Val Gly Gln Leu Pro Cys Leu
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Glu Ile Ser Ser Ser Val Thr Ser Tyr Gly Arg Gln Met Ile Glu His
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Thr Lys Lys Leu Val Glu Asp Lys Phe Thr Thr Leu Gly Gly Tyr Glu
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His Asn Ala Glu Val Ile Tyr Gly Asp Thr Asp Ser Val Met Val Gln
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Ala Asp Tyr Ile Ser Gly Thr Phe Ile Lys Pro Ile Lys Leu Glu Phe
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Glu Lys Ile Tyr Phe Pro Tyr Leu Leu Ile Ser Lys Lys Arg Tyr Ala
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Gly Leu Tyr Trp Thr Asn Pro Glu Lys Phe Asp Lys Met Asp Thr Lys
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Gly Ile Glu Thr Val Arg Arg Asp Asn Cys Leu Leu Val Lys Asn Leu
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Val Thr Glu Cys Leu His Lys Ile Leu Val Asp Arg Asp Val Pro Gly
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Ala Val Gln Tyr Val Lys Asn Thr Ile Ser Asp Leu Leu Met Asn Arg
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Glu Asp Tyr Ala Val Lys Ala Ala His Val Glu Leu Ala Glu Arg Met
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Arg Lys Arg Asp Ala Ala Thr Ala Pro Thr Val Gly Asp Arg Val Pro
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Tyr Val Ile Ile Lys Ala Ala Lys Gly Ala Lys Ala Tyr Glu Arg Ser
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Glu Asp Pro Ile Tyr Val Leu Asp Asn Asn Ile Pro Ile Asp Pro Gln
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Tyr Tyr Leu Glu Asn Gln Ile Ser Lys Pro Leu Leu Arg Ile Phe Glu
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Pro Ile Leu Lys Asn Ala Ser Arg Glu Leu Leu His Gly Ser His Thr
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Arg Ala Val Ser Ile Ser Thr Pro Ser Asn Ser Gly Ile Met Lys Phe
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Tyr Cys Lys Thr Val Gly Asn Val Ser Glu Leu Glu Met Leu Phe Gly
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Arg Leu Trp Thr Gln Cys Gln Glu Cys Gln Gly Ser Leu His Gln Asp
            1060                1065                1070
Val Leu Cys Thr Ser Arg Asp Cys Pro Ile Phe Tyr Arg Arg Arg Lys
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Gln Arg Gln Ala Leu Ala Asn Arg Leu Ser Lys Trp Thr Arg Pro Pro
        35                  40                  45
Leu Ser Ala Gly Tyr Val Ala Gln Ser Arg Ser Val Leu Phe Gln Gln
    50                  55                  60
Leu Glu Ile Asp Tyr Val Ile Ala Glu Ser His Gly Glu Leu Leu Pro
65                  70                  75                  80
Asn Ser Ser Gly Pro Val Ala Ile Ile Arg Ile Phe Gly Val Thr Lys
                85                  90                  95
Glu Gly His Ser Val Cys Cys Asn Val His Gly Phe Glu Pro Tyr Phe
            100                 105                 110
Tyr Ile Cys Cys Pro Pro Gly Met Gly Pro Asp Asp Ile Ser His Phe
        115                 120                 125
His Gln Thr Leu Glu Gly Arg Met Arg Glu Ala Asn Arg Asn Ser Asn
    130                 135                 140
Val Gly Lys Phe Val Arg Arg Ile Glu Met Val Gln Arg Arg Ser Ile
145                 150                 155                 160
Met Tyr Tyr Gln Gln Ser Asn Ser Gln Pro Phe Leu Lys Ile Val Val
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Ala Leu Pro Thr Met Val Ala Ser Cys Arg Gly Ile Leu Asp Arg Gly
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Ile Gln Leu Asp Gly Leu Gly Met Lys Ser Phe Leu Thr Tyr Glu Ser
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Asn Val Leu Phe Ala Leu Arg Phe Met Ile Asp Cys Asn Ile Val Gly
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Gly Asn Trp Ile Gly Ile Pro Ala Gly Lys Tyr Lys Lys Thr Ala Lys
225                 230                 235                 240
Ser Leu Ser Tyr Cys Gln Leu Glu Phe Asp Cys Leu Tyr Ser Glu Leu
                245                 250                 255
Ile Ser His Ala Pro Glu Gly Glu Tyr Ser Lys Met Ala Pro Phe Arg
            260                 265                 270
Ile Leu Ser Phe Asp Ile Glu Cys Ala Gly Arg Lys Gly His Phe Pro
        275                 280                 285
Glu Pro Thr His Asp Pro Val Ile Gln Ile Ala Asn Leu Val Thr Leu
    290                 295                 300
Gln Gly Glu Asp Gln Pro Phe Ile Arg Asn Val Met Thr Leu Lys Ser
305                 310                 315                 320
Cys Ser Pro Ile Val Gly Val Asp Val Met Pro Phe Glu Thr Glu Arg
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Glu Val Leu Leu Ala Trp Arg Asp Phe Ile Arg Glu Val Asp Pro Asp
            340                 345                 350
Ile Ile Ile Gly Tyr Asn Ile Cys Lys Phe Asp Leu Pro Tyr Leu Ile
        355                 360                 365
Glu Arg Ala Leu Asn Leu Lys Ile Ala Glu Phe Pro Ile Leu Gly Arg
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Ile Arg Asn Ser Arg Val Arg Val Lys Asp Thr Thr Phe Ser Ser Arg
385                 390                 395                 400
Gln Tyr Gly Thr Arg Glu Ser Lys Glu Val Ala Val Glu Gly Arg Val
                405                 410                 415
Thr Phe Asp Leu Leu Gln Val Met Gln Arg Asp Tyr Lys Leu Ser Ser
            420                 425                 430
Tyr Ser Leu Asn Ser Val Ser Ser His Phe Leu Ser Glu Gln Lys Glu
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Asp Val His His Ser Ile Ile Ser Asp Leu Gln Asn Gly Asn Ala Glu
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Thr Arg Arg Arg Leu Ala Val Tyr Cys Leu Lys Asp Ala Tyr Leu Pro
465                 470                 475                 480
Gln Arg Leu Leu Asp Lys Leu Met Phe Ile Tyr Asn Tyr Val Glu Met
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Ala Arg Val Thr Gly Val Pro Ile Ser Phe Leu Leu Ser Arg Gly Gln
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Ser Ile Lys Val Leu Ser Gln Leu Leu Arg Arg Ala Arg Gln Lys Asn
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Leu Val Ile Pro Asn Ala Lys Gln Ala Gly Ser Glu Gln Gly Thr Phe
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Glu Gly Ala Thr Val Leu Glu Ala Arg Ala Gly Phe Tyr Glu Lys Pro
545                 550                 555                 560
Ile Ala Thr Leu Asp Phe Ala Ser Leu Tyr Pro Ser Ile Met Met Ala
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Tyr Asn Leu Cys Tyr Cys Thr Leu Val Ile Pro Glu Asp Ala Arg Lys
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Leu Asn Ile Pro Pro Glu Ser Val Asn Arg Thr Pro Ser Gly Glu Thr
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Lys Asp Pro Leu Glu Lys Ala Val Leu Asp Gly Arg Gln Leu Ala Leu
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Lys Ile Ser Ala Asn Ser Val Tyr Gly Phe Thr Gly Ala Thr Ile Gly
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Gln Leu Pro Cys Leu Glu Ile Ser Ser Ser Val Thr Ser Tyr Gly Arg
        675                 680                 685
Gln Met Ile Glu His Thr Lys Lys Leu Val Glu Asp Lys Phe Thr Thr
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Leu Asn Gly Tyr Glu His Asn Ala Glu Val Ile Tyr Gly Asp Thr Asp
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Ser Val Met Val Gln Phe Gly Val Ser Ala Val Glu Glu Ala Met Asn
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Leu Gly Arg Glu Ala Ala Glu His Ile Ser Gly Thr Phe Thr Lys Pro
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Ile Lys Leu Glu Phe Glu Lys Val Tyr Tyr Pro Tyr Leu Leu Ile Ser
        755                 760                 765
Lys Lys Arg Tyr Ala Gly Leu Phe Trp Thr Lys Pro Asp Asn Phe Asp
    770                 775                 780
Lys Met Asp Thr Lys Gly Ile Glu Thr Val Arg Arg Asp Asn Cys Leu
785                 790                 795                 800
Leu Val Lys Asn Leu Val Asn Asp Cys Leu His Lys Ile Leu Ile Asp
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Arg Asp Ile Pro Gly Ala Val Gln Tyr Val Lys Asn Ala Ile Ser Asp
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Leu Leu Met Asn Arg Met Asp Leu Ser Leu Leu Val Ile Thr Lys Gly
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Leu Ala Glu Arg Met Arg Lys Arg Asp Ala Ala Thr Ala Pro Asn Val
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Gly Asp Arg Val Pro Tyr Val Ile Ile Lys Ala Ala Lys Gly Ala Lys
                885                 890                 895
Ala Tyr Glu Arg Ser Glu Asp Pro Ile Tyr Val Leu Glu Asn Asn Ile
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Pro Ile Asp Pro His Tyr Tyr Leu Glu Asn Gln Ile Ser Lys Pro Ile
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Leu Arg Ile Phe Glu Pro Ile Leu Lys Asn Ala Ser Lys Glu Leu Leu
    930                 935                 940
His Gly Ser His Thr Arg Ser Ile Ser Ile Ser Thr Pro Ser Asn Ser
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Gly Ile Leu Arg Phe Ala Lys Lys Gln Leu Pro Ala Leu Val Val Lys
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Leu Tyr Leu Ala Arg Val Ile Thr Leu Ser Val His Ile Ala Lys Glu
            980                 985                 990
Gly Arg Leu Ser Cys Thr Val Lys Gln Tyr Leu Lys Cys Leu Ser Trp
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Arg Cys Phe Leu Gly Gly Cys Gly His Ser Val Arg Ser Ala Lys Val
    1010                1015                1020
His Phe Ile Arg Met Phe Ser Ala Pro Val Gly Ile Val Gln Phe Ser
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<212> PRT
<213> Homo sapiens

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Gln Phe Glu Glu Asp Leu Ala Leu Met Glu Glu Met Glu Ala Glu His
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Arg Leu Gln Glu Gln Glu Glu Glu Glu Leu Gln Ser Val Leu Glu Gly
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Val Ala Asp Gly Gln Val Pro Pro Ser Ala Ile Asp Pro Arg Trp Leu
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Arg Pro Thr Pro Pro Ala Leu Asp Pro Gln Thr Glu Pro Leu Ile Phe
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Gln Gln Leu Glu Ile Asp His Tyr Val Gly Pro Ala Gln Pro Val Pro
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Gly Gly Pro Pro Pro Ser His Gly Ser Val Pro Val Leu Arg Ala Phe
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Gly Val Thr Asp Glu Gly Phe Ser Val Cys Cys His Ile His Gly Phe
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Ala Pro Tyr Phe Tyr Thr Pro Ala Pro Pro Gly Phe Gly Pro Glu His
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Met Gly Asp Leu Gln Arg Glu Leu Asn Leu Ala Ile Asn Arg Asp Ser
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Arg Gly Gly Arg Glu Leu Thr Gly Pro Ala Val Leu Ala Val Glu Leu
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Cys Ser Arg Glu Ser Met Phe Gly Tyr His Gly His Gly Pro Ser Pro
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Phe Leu Arg Ile Thr Val Ala Leu Pro Arg Leu Val Ala Pro Ala Arg
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Phe Ala Pro Tyr Glu Ala Asn Val Asp Phe Glu Ile Arg Phe Met Val
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Asp Thr Asp Ile Val Gly Cys Asn Trp Leu Glu Leu Pro Ala Gly Lys
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Tyr Ala Leu Arg Leu Lys Glu Lys Ala Thr Gln Cys Gln Leu Glu Ala
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Asp Val Leu Trp Ser Asp Val Val Ser His Pro Pro Glu Gly Pro Trp
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Gln Arg Ile Ala Pro Leu Arg Val Leu Ser Phe Asp Ile Glu Cys Ala
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Gly Arg Lys Gly Ile Phe Pro Glu Pro Glu Arg Asp Pro Val Ile Gln
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Ile Cys Ser Leu Gly Leu Arg Trp Gly Glu Pro Glu Pro Phe Leu Arg
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Gln Ser Tyr Glu Lys Glu Glu Asp Leu Leu Gln Ala Trp Ser Thr Phe
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Ile Arg Ile Met Asp Pro Asp Val Ile Thr Gly Tyr Asn Ile Gln Asn
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Thr Phe Pro Phe Leu Gly Arg Val Ala Gly Leu Cys Ser Asn Ile Arg
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Asp Ser Ser Phe Gln Ser Lys Gln Thr Gly Arg Arg Asp Thr Lys Val
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Tyr Tyr Asp Val Pro Ile Ala Thr Leu Asp Phe Ser Ser Leu Tyr Pro
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Thr Val Leu Thr Gly Lys Val Gly Gly Leu Leu Ala Phe Ala Lys Arg
        995                 1000                1005
Arg Asn Cys Cys Ile Gly Cys Arg Thr Val Leu Ser His Gln Gly Ala
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Val Cys Glu Phe Cys Gln Pro Arg Glu Ser Glu Leu Tyr Gln Lys Glu
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Val Ser His Leu Asn Ala Leu Glu Glu Arg Phe Ser Arg Leu Trp Thr
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Gln Cys Gln Arg Cys Gln Gly Ser Leu His Glu Asp Val Ile Cys Thr
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Ser Arg Asp Cys Pro Ile Phe Tyr Met Arg Lys Lys Val Arg Lys Asp
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Gly Phe Glu Arg Leu Lys Glu Pro Gly Glu Lys Thr Gly Trp Leu Ile
    50                  55                  60
Asn Met His Pro Thr Glu Ile Leu Asp Glu Asp Lys Arg Leu Gly Ser
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Ala Val Asp Tyr Tyr Phe Ile Gln Asp Asp Gly Ser Arg Phe Lys Val
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Ala Leu Pro Tyr Lys Pro Tyr Phe Tyr Ile Ala Thr Arg Lys Gly Cys
            100                 105                 110
Glu Arg Glu Val Ser Ser Phe Leu Ser Lys Lys Phe Gln Gly Lys Ile
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Ala Lys Val Glu Thr Val Pro Lys Glu Asp Leu Asp Leu Pro Asn His
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Glu Asp Leu Val Lys Val Arg Lys Glu Ile Ser Pro Ala Val Lys Lys
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Tyr Leu Ile Thr Asn Arg Glu Ile Val Ser Glu Asp Ile Glu Asp Phe
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Glu Pro Asp Glu Ala His Leu Ile Gln Arg Trp Phe Glu His Val Gln
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Thr Glu Gln Pro Gln Thr Leu Ala Thr Tyr Ser Val Ser Asp Ala Val
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Ser Gly Thr Leu Cys Glu Ala Leu Leu Met Val Gln Ala Phe His Ala
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Asn Ile Ile Phe Pro Asn Lys Gln Glu Gln Glu Phe Asn Lys Leu Thr
        515                 520                 525
Asp Asp Gly His Val Leu Asp Ser Glu Thr Tyr Val Gly Gly His Val
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Glu Ala Leu Glu Ser Gly Val Phe Arg Ser Asp Ile Pro Cys Arg Phe
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Arg Met Asn Pro Ala Ala Phe Asp Phe Leu Leu Gln Arg Val Glu Lys
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Val Thr Asn Phe Glu Glu Val Cys Asp Glu Ile Lys Ser Lys Leu Ala
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Gly Glu Phe Met Pro Ala Ser Arg Ser Glu Tyr His Arg Ile Gln His
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Arg Ala Phe His Glu Leu Ser Arg Glu Glu Gln Ala Lys Tyr Glu Lys
705                 710                 715                 720
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Thr Lys Val Glu Glu Arg Leu Thr Thr Ile Cys Gln Arg Glu Asn Ser
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Phe Tyr Val Asp Thr Val Arg Ala Phe Arg Asp Arg Arg Tyr Glu Phe
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Lys Gly Leu His Lys Val Trp Lys Lys Lys Leu Ser Ala Ala Val Glu
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Gly Tyr Val Met Arg Lys Gly Ala Arg Trp Tyr Ser Met Glu Met Ala
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Leu Ala Glu Pro Ser Ser Leu Thr Tyr Val Thr Arg Ser Glu Asn Ser
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Ile Phe Phe Glu Val Asp Gly Pro Tyr Leu Ala Met Ile Leu Pro Ala
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Ser Lys Glu Glu Gly Lys Lys Leu Lys Lys Arg Tyr Ala Val Phe Asn
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Glu Asp Gly Ser Leu Ala Glu Leu Lys Gly Phe Glu Val Lys Arg Arg
                965                 970                 975
Gly Glu Leu Gln Leu Ile Lys Ile Phe Gln Ser Ser Val Phe Glu Ala
            980                 985                 990
Phe Leu Lys Gly Ser Thr Leu Glu Glu Val Tyr Gly Ser Val Ala Lys
        995                 1000                1005
Val Ala Asp Tyr Trp Leu Asp Val Leu Tyr Ser Lys Ala Ala Asn Met
    1010                1015                1020
Pro Asp Ser Glu Leu Phe Glu Leu Ile Ser Glu Asn Arg Ser Met Ser
1025                1030                1035                1040
Arg Lys Leu Glu Asp Tyr Gly Glu Gln Lys Ser Thr Ser Ile Ser Thr
                1045                1050                1055
Ala Lys Arg Leu Ala Glu Phe Leu Gly Asp Gln Met Val Lys Asp Ala
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            1060                1065                1070
Gly Leu Ser Cys Arg Tyr Ile Ile Ser Arg Lys Pro Glu Gly Ser Pro
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Val Thr Glu Arg Ala Ile Pro Leu Ala Ile Phe Gln Ala Glu Pro Thr
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Val Arg Lys His Phe Leu Arg Lys Trp Leu Lys Ser Ser Ser Leu Gln
1105                1110                1115                1120
Asp Phe Asp Ile Arg Ala Ile Leu Asp Trp Asp Tyr Tyr Ile Glu Arg
                1125                1130                1135
Leu Gly Ser Ala Ile Gln Lys Ile Ile Thr Ile Pro Ala Ala Leu Gln
            1140                1145                1150
Gln Val Lys Asn Pro Val Pro Arg Val Lys His Pro Asp Trp Leu His
        1155                1160                1165
Lys Lys Leu Leu Glu Lys Asn Asp Val Tyr Lys Gln Lys Lys Ile Ser
    1170                1175                1180
Glu Leu Phe Thr Leu Glu Gly Arg Arg Gln Val Thr Met Ala Glu Ala
1185                1190                1195                1200
Ser Glu Asp Ser Pro Arg Pro Ser Ala Pro Asp Met Glu Asp Phe Gly
                1205                1210                1215
Leu Val Lys Leu Pro His Pro Ala Ala Pro Val Thr Val Lys Arg Lys
            1220                1225                1230
Arg Val Leu Trp Glu Ser Gln Glu Glu Ser Gln Asp Leu Thr Pro Thr
        1235                1240                1245
Val Pro Trp Gln Glu Ile Leu Gly Gln Pro Pro Ala Leu Gly Thr Ser
    1250                1255                1260
Gln Glu Glu Trp Leu Val Trp Leu Arg Phe His Lys Lys Lys Trp Gln
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Leu Gln Ala Arg Gln Arg Leu Ala Arg Arg Lys Arg Gln Arg Leu Glu
                1285                1290                1295
Ser Ala Glu Gly Val Leu Arg Pro Gly Ala Ile Arg Asp Gly Pro Ala
            1300                1305                1310
Thr Gly Leu Gly Ser Phe Leu Arg Arg Thr Ala Arg Ser Ile Leu Asp
        1315                1320                1325
Leu Pro Trp Gln Ile Val Gln Ile Ser Glu Thr Ser Gln Ala Gly Leu
    1330                1335                1340
Phe Arg Leu Trp Ala Leu Val Gly Ser Asp Leu His Cys Ile Arg Leu
1345                1350                1355                1360
Ser Ile Pro Arg Val Phe Tyr Val Asn Gln Arg Val Ala Lys Ala Glu
                1365                1370                1375
Glu Gly Ala Ser Tyr Arg Lys Val Asn Arg Val Leu Pro Arg Ser Asn
            1380                1385                1390
Met Val Tyr Asn Leu Tyr Glu Tyr Ser Val Pro Glu Asp Met Tyr Gln
        1395                1400                1405
Glu His Ile Asn Glu Ile Asn Ala Glu Leu Ser Ala Pro Asp Ile Glu
    1410                1415                1420
Gly Val Tyr Glu Thr Gln Val Pro Leu Leu Phe Arg Ala Leu Val His
1425                1430                1435                1440
Leu Gly Cys Val Cys Val Val Asn Lys Gln Leu Val Arg His Leu Ser
                1445                1450                1455
Gly Trp Glu Ala Glu Thr Phe Ala Leu Glu His Leu Glu Met Arg Ser
            1460                1465                1470
Leu Ala Gln Phe Ser Tyr Leu Glu Pro Gly Ser Ile Arg His Ile Tyr
        1475                1480                1485
Leu Tyr His His Ala Gln Ala His Lys Ala Leu Phe Gly Ile Phe Ile
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Pro Ser Gln Arg Arg Ala Ser Val Phe Val Leu Asp Thr Val Arg Ser
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Asn Gln Met Pro Ser Leu Gly Ala Leu Tyr Ser Ala Glu His Gly Leu
                1525                1530                1535
Leu Leu Glu Lys Val Gly Pro Glu Leu Leu Pro Pro Pro Lys His Thr
            1540                1545                1550
Phe Glu Val Arg Ala Glu Thr Asp Leu Lys Thr Ile Cys Arg Ala Ile
        1555                1560                1565
Gln Arg Phe Leu Leu Ala Tyr Lys Glu Glu Arg Arg Gly Pro Thr Leu
    1570                1575                1580
Ile Ala Val Gln Ser Ser Trp Glu Leu Lys Arg Leu Ala Ser Glu Ile
1585                1590                1595                1600
Pro Val Leu Glu Glu Phe Pro Leu Val Pro Ile Cys Val Ala Asp Lys
                1605                1610                1615
Ile Asn Tyr Gly Val Leu Asp Trp Gln Arg His Gly Ala Arg Arg Met
            1620                1625                1630
Ile Arg His Tyr Leu Asn Leu Asp Thr Cys Leu Ser Gln Ala Phe Glu
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Met Ser Arg Tyr Phe His Ile Pro Ile Gly Asn Leu Pro Glu Asp Ile
    1650                1655                1660
Ser Thr Phe Gly Ser Asp Leu Phe Phe Ala Arg His Leu Gln Arg His
1665                1670                1675                1680
Asn His Leu Leu Trp Leu Ser Pro Thr Ala Arg Pro Asp Leu Gly Gly
                1685                1690                1695
Lys Glu Ala Asp Asp Asn Cys Leu Val Met Glu Phe Asp Asp Gln Ala
            1700                1705                1710
Thr Val Glu Ile Asn Ser Ser Gly Cys Tyr Ser Thr Val Cys Val Glu
        1715                1720                1725
Leu Asp Leu Gln Asn Leu Ala Val Asn Thr Ile Leu Gln Ser His His
    1730                1735                1740
Val Asn Asp Met Glu Gly Ala Asp Ser Met Gly Ile Ser Phe Asp Val
1745                1750                1755                1760
Ile Gln Gln Ala Ser Leu Glu Asp Met Ile Thr Gly Gly Gln Ala Ala
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Ser Ala Pro Ala Ser Tyr Asp Glu Thr Ala Leu Cys Ser Asn Thr Phe
            1780                1785                1790
Arg Ile Leu Lys Ser Met Val Val Gly Trp Val Lys Glu Ile Thr Gln
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Tyr His Asn Ile Tyr Ala Asp Asn Gln Val Met His Phe Tyr Arg Trp
    1810                1815                1820
Leu Arg Ser Pro Ser Ser Leu Leu His Asp Pro Ala Leu His Arg Thr
1825                1830                1835                1840
Leu His Asn Met Met Lys Lys Leu Phe Leu Gln Leu Ile Ala Glu Phe
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Lys Arg Leu Gly Ser Ser Val Ile Tyr Ala Asn Phe Asn Arg Ile Ile
            1860                1865                1870
Leu Cys Thr Lys Lys Arg Arg Val Glu Asp Ala Ile Ala Tyr Val Glu
        1875                1880                1885
Tyr Ile Thr Ser Ser Ile His Ser Lys Glu Thr Phe His Ser Leu Thr
    1890                1895                1900
Ile Ser Phe Ser Arg Cys Trp Glu Phe Leu Leu Trp Met Asp Pro Ser
1905                1910                1915                1920
Asn Tyr Gly Gly Ile Lys Gly Lys Val Ser Ser Arg Ile His Cys Gly
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                1925                1930                1935
Leu Gln Asp Ser Gln Lys Ala Gly Gly Ala Glu Asp Glu Gln Glu Asn
            1940                1945                1950
Glu Asp Asp Glu Glu Glu Arg Asp Gly Glu Glu Glu Glu Glu Ala Glu
        1955                1960                1965
Glu Ser Asn Val Glu Asp Leu Leu Glu Asn Asn Trp Asn Ile Leu Gln
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Phe Leu Pro Gln Ala Ala Ser Cys Gln Asn Tyr Phe Leu Met Ile Val
1985                1990                1995                2000
Ser Ala Tyr Ile Val Ala Val Tyr His Cys Met Lys Asp Gly Leu Arg
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Arg Ser Ala Pro Gly Ser Thr Pro Val Arg Arg Arg Gly Ala Ser Gln
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Leu Ser Gln Glu Ala Glu Gly Ala Val Gly Ala Leu Pro Gly Met Ile
        2035                2040                2045
Thr Phe Ser Gln Asp Tyr Val Ala Asn Glu Leu Thr Gln Ser Phe Phe
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Thr Ile Thr Gln Lys Ile Gln Lys Lys Val Thr Gly Ser Arg Asn Ser
2065                2070                2075                2080
Thr Glu Leu Ser Glu Met Phe Pro Val Leu Pro Gly Ser His Leu Leu
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Leu Asn Asn Pro Ala Leu Glu Phe Ile Lys Tyr Val Cys Lys Val Leu
            2100                2105                2110
Ser Leu Asp Thr Asn Ile Thr Asn Gln Val Asn Lys Leu Asn Arg Asp
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Leu Leu Arg Leu Val Asp Val Gly Glu Phe Ser Glu Glu Ala Gln Phe
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Arg Asp Pro Cys Arg Ser Tyr Val Leu Pro Glu Val Ile Cys Arg Ser
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Cys Asn Phe Cys Arg Asp Leu Asp Leu Cys Lys Asp Ser Ser Phe Ser
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Glu Asp Gly Ala Val Leu Pro Gln Trp Leu Cys Ser Asn Cys Gln Ala
            2180                2185                2190
Pro Tyr Asp Ser Ser Ala Ile Glu Met Thr Leu Val Glu Val Leu Gln
        2195                2200                2205
Lys Lys Leu Met Ala Phe Thr Leu Gln Asp Leu Val Cys Leu Lys Cys
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Arg Gly Val Lys Glu Thr Ser Met Pro Val Tyr Cys Thr Cys Ala Gly
2225                2230                2235                2240
Asp Phe Ala Leu Thr Ile His Thr Gln Val Phe Met Glu Gln Ile Gly
                2245                2250                2255
Ile Phe Arg Asn Ile Ala Gln His Tyr Gly Met Ser Tyr Leu Leu Glu
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Thr Leu Glu Trp Leu Leu Gln Lys Asn Pro Gln Leu Gly His
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<213> Mus musculus

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         35                  40                  45
Leu Gln Glu Ala Glu Glu Glu Leu Gln Leu Pro Pro Glu Gly Thr Val
     50                  55                  60
Gly Gly Gln Phe Ser Thr Ala Asp Ile Asp Pro Arg Trp Arg Arg Pro
 65                  70                  75                  80
Thr Leu Arg Ala Leu Asp Pro Ser Thr Glu Pro Leu Ile Phe Gln Gln
                 85                  90                  95
Leu Glu Ile Asp His Tyr Val Gly Ser Ala Pro Pro Leu Pro Glu Arg
             100                 105                 110
Pro Leu Pro Ser Arg Asn Ser Val Pro Ile Leu Arg Ala Phe Gly Val
         115                 120                 125
Thr Asp Glu Gly Phe Ser Val Cys Cys His Ile Gln Gly Phe Ala Pro
     130                 135                 140
Tyr Phe Tyr Thr Pro Ala Pro Pro Gly Phe Gly Ala Glu His Leu Ser
 145                 150                 155                 160
Glu Leu Gln Gln Glu Leu Asn Ala Ala Ile Ser Arg Asp Gln Arg Gly
                 165                 170                 175
Gly Lys Glu Leu Ser Gly Pro Ala Val Leu Ala Ile Glu Leu Cys Ser
             180                 185                 190
Arg Glu Ser Met Phe Gly Tyr His Gly His Gly Pro Ser Pro Phe Leu
         195                 200                 205
Arg Ile Thr Leu Ala Leu Pro Arg Leu Met Ala Pro Ala Arg Arg Leu
     210                 215                 220
Leu Glu Gln Gly Val Arg Val Pro Gly Leu Gly Thr Pro Ser Phe Ala
 225                 230                 235                 240
Pro Tyr Glu Ala Asn Val Asp Phe Glu Ile Arg Phe Met Val Asp Ala
                 245                 250                 255
Asp Ile Val Gly Cys Asn Trp Leu Glu Leu Pro Ala Gly Lys Tyr Val
             260                 265                 270
Arg Arg Ala Glu Lys Lys Ala Thr Leu Cys Gln Leu Glu Val Asp Val
         275                 280                 285
Leu Trp Ser Asp Val Ile Ser His Pro Pro Glu Gly Gln Trp Gln Arg
     290                 295                 300
Ile Ala Pro Leu Arg Val Leu Ser Phe Asp Ile Glu Cys Ala Gly Arg
 305                 310                 315                 320
Lys Gly Ile Phe Pro Glu Pro Glu Arg Asp Pro Val Ile Gln Ile Cys
                 325                 330                 335
Ser Leu Gly Leu Arg Trp Gly Glu Pro Glu Pro Phe Leu Arg Leu Ala
             340                 345                 350
Leu Thr Leu Arg Pro Cys Ala Pro Ile Leu Gly Ala Lys Val Gln Ser
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Tyr Glu Arg Glu Glu Asp Leu Leu Gln Ala Trp Ala Asp Phe Ile Leu
    370                 375                 380
Ala Met Asp Pro Asp Val Ile Thr Gly Tyr Asn Ile Gln Asn Phe Asp
385                 390                 395                 400
Leu Pro Tyr Leu Ile Ser Arg Ala Gln Ala Leu Lys Val Asp Arg Phe
                405                 410                 415
Pro Phe Leu Gly Arg Val Thr Gly Leu Arg Ser Asn Ile Arg Asp Ser
            420                 425                 430
Ser Phe Gln Ser Arg Gln Val Gly Arg Arg Asp Ser Lys Val Ile Ser
        435                 440                 445
Met Val Gly Arg Val Gln Met Asp Met Leu Gln Val Leu Leu Arg Glu
    450                 455                 460
His Lys Leu Arg Ser Tyr Thr Leu Asn Ala Val Ser Phe His Phe Leu
465                 470                 475                 480
Gly Glu Gln Lys Glu Asp Val Gln His Ser Ile Ile Thr Asp Leu Gln
                485                 490                 495
Asn Gly Asn Glu Gln Thr Arg Arg Arg Leu Ala Val Tyr Cys Leu Lys
            500                 505                 510
Asp Ala Phe Leu Pro Leu Arg Leu Leu Glu Arg Leu Met Val Leu Val
        515                 520                 525
Asn Asn Val Glu Met Ala Arg Val Thr Gly Val Pro Leu Gly Tyr Leu
    530                 535                 540
Leu Thr Arg Gly Gln Gln Val Lys Val Val Ser Gln Leu Leu Arg Gln
545                 550                 555                 560
Ala Met Arg Gln Gly Leu Leu Met Pro Val Val Lys Thr Glu Gly Gly
                565                 570                 575
Glu Asp Tyr Thr Gly Ala Thr Val Ile Glu Pro Leu Lys Gly Tyr Tyr
            580                 585                 590
Asp Val Pro Ile Ala Thr Leu Asp Phe Ser Ser Leu Tyr Pro Ser Ile
        595                 600                 605
Met Met Ala His Asn Leu Cys Tyr Thr Thr Leu Leu Arg Pro Gly Ala
    610                 615                 620
Ala Gln Lys Leu Gly Leu Lys Pro Asp Glu Phe Ile Lys Thr Pro Thr
625                 630                 635                 640
Gly Asp Glu Phe Val Lys Ser Ser Val Arg Lys Gly Leu Leu Pro Gln
                645                 650                 655
Ile Leu Glu Asn Leu Leu Ser Ala Arg Lys Arg Ala Lys Ala Glu Leu
            660                 665                 670
Ala Gln Glu Thr Asp Pro Leu Arg Arg Gln Val Leu Asp Gly Arg Gln
        675                 680                 685
Leu Ala Leu Lys Val Ser Ala Asn Ser Val Tyr Gly Phe Thr Gly Ala
    690                 695                 700
Gln Val Gly Lys Leu Pro Cys Leu Glu Ile Ser Gln Ser Val Thr Gly
705                 710                 715                 720
Phe Gly Arg Gln Met Ile Glu Lys Thr Lys Gln Leu Val Glu Ser Lys
                725                 730                 735
Tyr Thr Val Glu Asn Gly Tyr Asp Ala Asn Ala Lys Val Val Tyr Gly
            740                 745                 750
Asp Thr Asp Ser Val Met Cys Arg Phe Gly Val Ser Ser Val Ala Glu
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Ala Met Ser Leu Gly Arg Glu Ala Ala Asn Trp Val Ser Ser His Phe
    770                 775                 780
Pro Ser Pro Ile Arg Leu Glu Phe Glu Lys Val Tyr Phe Pro Tyr Leu
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Asp Ala His Asp Lys Met Asp Cys Lys Gly Leu Glu Ala Val Arg Arg
            820                 825                 830
Asp Asn Cys Pro Leu Val Ala Asn Leu Val Thr Ser Ser Leu Arg Arg
        835                 840                 845
Ile Leu Val Asp Arg Asp Pro Asp Gly Ala Val Ala His Ala Lys Asp
    850                 855                 860
Val Ile Ser Asp Leu Leu Cys Asn Arg Ile Asp Ile Ser Gln Leu Val
865                 870                 875                 880
Ile Thr Lys Glu Leu Thr Arg Ala Ala Ala Asp Tyr Ala Gly Lys Gln
                885                 890                 895
Ala His Val Glu Leu Ala Glu Arg Met Arg Lys Arg Asp Pro Gly Ser
            900                 905                 910
Ala Pro Ser Leu Gly Asp Arg Val Pro Tyr Val Ile Ile Gly Ala Ala
        915                 920                 925
Lys Gly Val Ala Ala Tyr Met Lys Ser Glu Asp Pro Leu Phe Val Leu
    930                 935                 940
Glu His Ser Leu Pro Ile Asp Thr Gln Tyr Tyr Leu Glu Gln Gln Leu
945                 950                 955                 960
Ala Lys Pro Leu Leu Arg Ile Phe Glu Pro Ile Leu Gly Glu Gly Arg
                965                 970                 975
Ala Glu Ser Val Leu Leu Arg Gly Asp His Thr Arg Cys Lys Thr Val
            980                 985                 990
Leu Thr Ser Lys Val Gly Gly Leu Leu Ala Phe Thr Lys Arg Arg Asn
        995                 1000                1005
Cys Cys Ile Gly Cys Arg Ser Val Ile Asp His Gln Gly Ala Val Cys
    1010                1015                1020
Lys Phe Cys Gln Pro Arg Glu Ser Glu Leu Ser Gln Lys Glu Val Ser
1025                1030                1035                1040
His Leu Asn Ala Leu Glu Glu Arg Phe Ser Arg Leu Trp Thr Gln Cys
                1045                1050                1055
Gln Arg Cys Gln Gly Ser Leu His Glu Asp Val Ile Cys Thr Ser Arg
            1060                1065                1070
Asp Cys Pro Ile Phe Tyr Met Arg Lys Lys Val Arg Lys Asp Leu Glu
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Asp Gln Glu Arg Leu Leu Gln Arg Phe Gly Pro Pro Gly Pro Glu Ala
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Trp
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<211> 7119
<212> DNA
<213> Mus musculus

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        35                  40                  45
Gly Phe Glu Arg Leu Lys Glu Pro Gly Glu Arg Thr Gly Trp Leu Ile
    50                  55                  60
Asn Met His Pro Thr Glu Ile Leu Asp Glu Asp Lys Arg Leu Val Ser
65                  70                  75                  80
Ala Val Asp Tyr Tyr Phe Ile Gln Asp Asp Gly Ser Arg Phe Lys Val
                85                  90                  95
Ala Leu Pro Tyr Met Pro Tyr Phe Tyr Ile Ala Ala Arg Lys Gly Cys
            100                 105                 110
Asp Arg Glu Val Ser Ser Phe Leu Ser Lys Lys Phe Gln Gly Lys Ile
        115                 120                 125
Ala Lys Leu Glu Asn Val Pro Lys Glu Asp Leu Asp Leu Pro Asn His
    130                 135                 140
Leu Val Gly Leu Lys Arg Ser Tyr Ile Lys Leu Ser Phe His Thr Val
145                 150                 155                 160
Glu Asp Leu Val Lys Val Arg Lys Glu Ile Ser Pro Ala Val Lys Lys
                165                 170                 175
Asn Arg Glu Gln Asp His Ala Ser Asp Glu Tyr Thr Thr Met Leu Ser
            180                 185                 190
Ser Ile Leu Gln Gly Gly Ser Val Ile Thr Asp Glu Glu Glu Thr Ser
        195                 200                 205
Lys Lys Ile Ala Asp Gln Leu Asp Asn Ile Val Asp Met Arg Glu Tyr
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Asp Val Pro Tyr His Ile Arg Leu Ser Ile Asp Leu Arg Ile His Val
225                 230                 235                 240
Ala His Trp Tyr Asn Val Arg Phe Arg Gly Asn Ala Phe Pro Val Glu
                245                 250                 255
Ile Thr Arg Arg Asp Asp Leu Val Glu Arg Pro Asp Pro Val Val Leu
            260                 265                 270
Ala Phe Asp Ile Glu Thr Thr Lys Leu Pro Leu Lys Phe Pro Asp Ala
        275                 280                 285
Glu Thr Asp Gln Ile Met Met Ile Ser Tyr Met Ile Asp Gly Gln Gly
    290                 295                 300
Tyr Leu Ile Thr Asn Arg Glu Ile Val Ser Glu Asp Ile Glu Asp Phe
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Glu Phe Thr Pro Lys Pro Glu Tyr Glu Gly Pro Phe Cys Val Phe Asn
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Glu Pro Asp Glu Val His Leu Ile Gln Arg Trp Phe Glu His Ile Gln
            340                 345                 350
Glu Thr Lys Pro Thr Ile Met Val Thr Tyr Asn Gly Asp Phe Phe Asp
        355                 360                 365
Trp Pro Phe Val Glu Ala Arg Ala Ala Ile His Gly Leu Ser Met Tyr
    370                 375                 380
Gln Glu Ile Gly Phe Gln Lys Asp Ser Gln Gly Glu Tyr Lys Ala Pro
385                 390                 395                 400
Gln Cys Ile His Met Asp Cys Leu Arg Trp Val Lys Arg Asp Ser Tyr
                405                 410                 415
Leu Pro Val Gly Ser His Asn Leu Lys Ala Ala Ala Lys Ala Lys Leu
            420                 425                 430
Gly Tyr Asp Pro Val Glu Leu Asp Pro Glu Asp Met Cys Arg Met Ala
        435                 440                 445
Thr Glu Gln Pro Gln Thr Leu Ala Thr Tyr Ser Val Ser Asp Ala Val
    450                 455                 460
Ala Thr Tyr Tyr Leu Tyr Met Lys Tyr Val His Pro Phe Ile Phe Ala
465                 470                 475                 480
Leu Cys Thr Ile Ile Pro Met Glu Pro Asp Glu Val Leu Arg Lys Gly
                485                 490                 495
Ser Gly Thr Leu Cys Glu Ala Leu Leu Met Val Gln Ala Phe His Ala
            500                 505                 510
Asn Ile Ile Phe Pro Asn Lys Gln Glu Gln Glu Phe Asn Lys Leu Thr
        515                 520                 525
Asp Asp Gly His Val Leu Asp Ala Glu Thr Tyr Val Gly Gly His Val
    530                 535                 540
Glu Ala Leu Glu Ser Gly Val Phe Arg Ser Asp Ile Pro Cys Arg Phe
545                 550                 555                 560
Arg Met Asn Pro Ala Ala Phe Asp Phe Leu Leu Gln Arg Val Glu Lys
                565                 570                 575
Thr Met Arg His Ala Ile Glu Glu Glu Glu Lys Val Pro Val Glu Gln
            580                 585                 590
Ala Thr Asn Phe Gln Glu Val Cys Glu Gln Ile Lys Thr Lys Leu Thr
        595                 600                 605
Ser Leu Lys Asp Val Pro Asn Arg Ile Glu Cys Pro Leu Ile Tyr His
    610                 615                 620
Leu Asp Val Gly Ala Met Tyr Pro Asn Ile Ile Leu Thr Asn Arg Leu
625                 630                 635                 640
Gln Pro Ser Ala Ile Val Asp Glu Ala Thr Cys Ala Ala Cys Asp Phe
                645                 650                 655
Asn Lys Pro Gly Ala Ser Cys Gln Arg Lys Met Ala Trp Gln Trp Arg
            660                 665                 670
Gly Glu Phe Met Pro Ala Ser Arg Ser Glu Tyr His Arg Ile Gln His
        675                 680                 685
Gln Leu Glu Ser Glu Lys Phe Pro Pro Leu Phe Pro Glu Gly Pro Ala
    690                 695                 700
Arg Ala Phe His Glu Leu Ser Arg Glu Glu Gln Ala Lys Tyr Glu Lys
705                 710                 715                 720
Arg Arg Leu Ala Asp Tyr Cys Arg Lys Ala Tyr Lys Lys Ile His Val
                725                 730                 735
Thr Lys Val Glu Glu Arg Leu Thr Thr Ile Cys Gln Arg Glu Asn Ser
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            740                 745                 750
Phe Tyr Val Asp Thr Val Arg Ala Phe Arg Asp Arg Arg Tyr Glu Phe
        755                 760                 765
Lys Gly Leu His Lys Val Trp Lys Lys Lys Leu Ser Ala Ala Val Glu
    770                 775                 780
Val Gly Asp Ala Ser Glu Val Lys Arg Cys Lys Asn Met Glu Ile Leu
785                 790                 795                 800
Tyr Asp Ser Leu Gln Leu Ala His Lys Cys Ile Leu Asn Ser Phe Tyr
                805                 810                 815
Gly Tyr Val Met Arg Lys Gly Ala Arg Trp Tyr Ser Met Glu Met Ala
            820                 825                 830
Gly Ile Val Cys Phe Thr Gly Ala Asn Ile Ile Thr Gln Ala Arg Glu
        835                 840                 845
Leu Ile Glu Gln Ile Gly Arg Pro Leu Glu Leu Asp Thr Asp Gly Ile
    850                 855                 860
Trp Cys Val Leu Pro Asn Ser Phe Pro Glu Asn Phe Val Ile Lys Thr
865                 870                 875                 880
Thr Asn Ala Lys Lys Pro Lys Leu Thr Ile Ser Tyr Pro Gly Ala Met
                885                 890                 895
Leu Asn Ile Met Val Lys Glu Gly Phe Thr Asn His Gln Tyr Gln Glu
            900                 905                 910
Leu Thr Glu Pro Ser Ser Leu Thr Tyr Val Thr His Ser Glu Asn Ser
        915                 920                 925
Ile Phe Phe Glu Val Asp Gly Pro Tyr Leu Ala Met Ile Leu Pro Ala
    930                 935                 940
Ser Lys Glu Glu Gly Lys Lys Leu Lys Lys Arg Tyr Ala Val Phe Asn
945                 950                 955                 960
Glu Asp Gly Ser Leu Ala Glu Leu Lys Gly Phe Glu Val Lys Arg Arg
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Gly Glu Leu Gln Leu Ile Lys Ile Phe Gln Ser Ser Val Phe Glu Ala
            980                 985                 990
Phe Leu Lys Gly Ser Thr Leu Glu Glu Val Tyr Gly Ser Val Ala Lys
        995                 1000                1005
Val Ala Asp Tyr Trp Leu Asp Val Leu Tyr Ser Lys Ala Ala Asn Met
    1010                1015                1020
Pro Asp Ser Glu Leu Phe Glu Leu Ile Ser Glu Asn Arg Ser Met Ser
1025                1030                1035                1040
Arg Lys Leu Glu Asp Tyr Gly Glu Gln Lys Ser Thr Ser Ile Ser Thr
                1045                1050                1055
Ala Lys Arg Leu Ala Glu Phe Leu Gly Asp Gln Met Val Lys Asp Ala
            1060                1065                1070
Gly Leu Ser Cys Arg Tyr Ile Ile Ser Arg Lys Pro Glu Gly Ser Pro
        1075                1080                1085
Val Thr Glu Arg Ala Ile Pro Leu Ala Ile Phe Gln Ala Glu Pro Thr
    1090                1095                1100
Val Arg Lys His Phe Leu Arg Lys Trp Leu Lys Ser Ser Ser Leu Gln
1105                1110                1115                1120
Asp Phe Asp Ile Arg Thr Ile Leu Asp Trp Asp Tyr Tyr Ile Glu Arg
                1125                1130                1135
Leu Gly Ser Ala Ile Gln Lys Ile Ile Thr Ile Pro Ala Ala Leu Gln
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Gln Val Lys Asn Pro Val Pro Arg Val Lys His Pro Asp Trp Leu His
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Lys Lys Leu Leu Glu Lys Asn Asp Ile Tyr Lys Gln Lys Lys Ile Ser
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Glu Leu Phe Val Leu Glu Gly Lys Arg Gln Ile Val Met Ala Gln Ala
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Ser Glu Asn Ser Leu Ser Leu Cys Thr Pro Asp Met Glu Asp Ile Gly
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Leu Thr Lys Pro His His Ser Thr Val Pro Val Ala Thr Lys Arg Lys
            1220                1225                1230
Arg Val Trp Glu Thr Gln Lys Glu Ser Gln Asp Ile Ala Leu Thr Val
        1235                1240                1245
Pro Trp Gln Glu Val Leu Gly Gln Pro Pro Ser Leu Gly Thr Thr Gln
    1250                1255                1260
Glu Glu Trp Leu Val Trp Leu Gln Phe His Lys Lys Lys Trp Gln Leu
1265                1270                1275                1280
Gln Ala Gln Gln Arg Leu Ala Leu Arg Lys Lys Gln Arg Leu Glu Ser
                1285                1290                1295
Ala Glu Asp Met Pro Arg Leu Gly Pro Ile Arg Glu Glu Pro Ser Thr
            1300                1305                1310
Gly Leu Gly Ser Phe Leu Arg Arg Thr Ala Arg Ser Ile Met Asp Leu
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Pro Trp Gln Ile Ile Gln Ile Ser Glu Thr Arg Gln Ala Gly Leu Phe
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Arg Leu Trp Ala Ile Ile Gly Asn Asp Leu His Cys Ile Lys Leu Ser
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Ile Pro Arg Val Phe Tyr Val Asn Gln Arg Val Ala Lys Ala Glu Asp
                1365                1370                1375
Gly Pro Ala Tyr Arg Lys Val Asn Arg Gly Leu Phe Leu Arg Ser Asn
            1380                1385                1390
Ile Val Tyr Asn Leu Tyr Glu Tyr Ser Val Pro Glu Asp Met Tyr Gln
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Glu His Ile Asn Glu Ile Asn Thr Glu Leu Ser Val Pro Asp Ile Glu
    1410                1415                1420
Gly Val Tyr Glu Thr Gln Val Pro Leu Leu Phe Arg Ala Leu Val Gln
1425                1430                1435                1440
Leu Gly Cys Val Cys Val Val Asn Lys Gln Leu Thr Arg His Leu Ser
                1445                1450                1455
Gly Trp Glu Ala Glu Thr Phe Ala Leu Glu His Leu Glu Met Arg Ser
            1460                1465                1470
Leu Ala Gln Phe Ser Tyr Leu Glu Pro Gly Ser Ile Arg His Ile Tyr
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Leu Tyr His His Thr Gln Gly His Lys Ala Leu Phe Gly Val Phe Ile
    1490                1495                1500
Pro Ser Gln Arg Arg Ala Ser Val Phe Val Leu Asp Thr Val Arg Ser
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Asn Gln Met Pro Gly Leu Ser Ala Leu Tyr Ser Ser Glu His Ser Leu
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Leu Leu Asp Lys Val Asp Pro Lys Leu Leu Pro Pro Pro Lys His Thr
            1540                1545                1550
Phe Glu Val Arg Ala Glu Thr Asn Leu Glu Thr Ile Cys Arg Ala Ile
        1555                1560                1565
Gln Arg Phe Leu Leu Ala Tyr Lys Glu Glu Arg Arg Gly Pro Thr Leu
    1570                1575                1580
Ile Ala Val Gln Ser Ser Trp Glu Leu Cys Arg Leu Thr Ser Glu Ile
1585                1590                1595                1600
Pro Val Leu Glu Glu Phe Pro Leu Val Pro Ile Arg Val Ala Asp Lys
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Ile Arg His Tyr Leu Asn Leu Asp Leu Cys Leu Ser Gln Ala Phe Glu
        1635                1640                1645
Met Ser Arg Tyr Phe His Ile Pro Val Gly Asn Leu Pro Glu Asp Ile
    1650                1655                1660
Ser Ile Phe Gly Ser Asp Leu Phe Phe Ala Arg His Leu Gln His His
1665                1670                1675                1680
Asn His Leu Leu Trp Leu Ser Pro Thr Ser Arg Pro Asp Leu Gly Gly
                1685                1690                1695
Lys Glu Ala Asp Asp Asn Arg Leu Val Met Glu Phe Asp Asp Arg Ala
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Thr Val Glu Ile Asn Ser Ser Gly Cys Tyr Ser Thr Val Cys Val Glu
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Leu Asp Ile Gln Asn Leu Ala Val Asn Thr Ile Leu Gln Ser His His
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Val Asn Asp Met Glu Gly Ala Gly Ser Met Gly Ile Ser Phe Asp Val
1745                1750                1755                1760
Ile Gln Gln Ala Ser Leu Glu Asp Met Val Thr Gly Asn Gln Ala Ala
                1765                1770                1775
Ser Ala Leu Ala Asn Tyr Asp Glu Thr Ala Leu Cys Ser Ser Thr Phe
            1780                1785                1790
Arg Ile Leu Lys Ser Met Val Val Gly Trp Val Lys Glu Ile Thr Gln
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Tyr His Asn Ile Tyr Ala Asp Asn Gln Val Met His Phe Tyr Arg Trp
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Leu Gln Ser Pro Cys Ser Leu Leu His Asp Pro Ala Leu His Arg Thr
1825                1830                1835                1840
Leu His Asn Met Met Lys Lys Leu Phe Leu Gln Leu Ile Ala Glu Phe
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Lys Arg Leu Gly Ser Ser Val Val Tyr Ala Asn Phe Asn Arg Ile Ile
            1860                1865                1870
Leu Cys Thr Lys Lys Arg Arg Ile Glu Asp Ala Leu Ala Tyr Val Glu
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Tyr Ile Thr Asn Ser Ile His Ser Lys Glu Ile Phe His Ser Leu Thr
    1890                1895                1900
Ile Ser Phe Ser Arg Cys Trp Glu Phe Leu Leu Trp Met Asp Pro Ser
1905                1910                1915                1920
Asn Tyr Gly Gly Ile Lys Gly Lys Val Pro Ser Ser Ile His Cys Gly
                1925                1930                1935
Gln Val Lys Glu Gln Asp Ser Gln Ala Arg Glu Glu Thr Asp Glu Glu
            1940                1945                1950
Glu Glu Asp Lys Glu Lys Asp Glu Glu Glu Glu Gly Met Gly Glu Ser
        1955                1960                1965
Glu Val Glu Asp Leu Leu Glu Asn Asn Trp Asn Ile Leu Gln Phe Leu
    1970                1975                1980
Pro Gln Ala Ala Ser Cys Gln Ser Tyr Phe Leu Met Ile Val Ser Ala
1985                1990                1995                2000
Tyr Ile Val Ala Val Tyr Gln Ser Met Lys Glu Glu Leu Arg His Ser
                2005                2010                2015
Ala Pro Gly Ser Thr Pro Val Lys Arg Lys Gly Ala Ser Gln Phe Ser
            2020                2025                2030
Gln Glu Ser Glu Gly Ala Thr Gly Ser Leu Pro Gly Met Ile Thr Phe
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2065                2070                2075                2080
Pro Ser Glu Met Phe Pro Val Leu Pro Gly Ser His Leu Leu Leu Asn
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Asn Pro Ala Leu Glu Phe Ile Lys Tyr Val Cys Lys Val Leu Ser Gln
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Asp Thr Asn Ile Thr Asn Gln Val Asn Lys Leu Asn Arg Asp Leu Leu
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Arg Leu Val Asp Val Gly Glu Phe Ser Glu Glu Ala Gln Phe Arg Asp
    2130                2135                2140
Pro Cys His Ser Tyr Val Leu Pro Glu Val Ile Cys His Ser Cys Asn
2145                2150                2155                2160
Phe Cys Arg Asp Leu Asp Leu Cys Lys Asp Ser Ser Phe Ser Gln Asp
                2165                2170                2175
Gly Ala Ile Leu Pro Gln Trp Leu Cys Ser Asn Cys Gln Ala Pro Tyr
            2180                2185                2190
Asp Ser Ser Ala Ile Glu Ser Ala Leu Val Glu Ala Leu Gln Arg Lys
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Leu Met Ala Phe Thr Leu Gln Asp Leu Val Cys Leu Lys Cys Arg Gly
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Met Lys Glu Thr His Met Pro Val Tyr Cys Ser Cys Ala Gly Asp Phe
2225                2230                2235                2240
Thr Leu Thr Ile Arg Thr Glu Val Phe Met Glu Gln Ile Arg Ile Phe
                2245                2250                2255
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            20                  25                  30
Glu Asn Leu Ala Leu Leu Glu Glu Ile Glu Ala Glu Asn Arg Leu Gln
        35                  40                  45
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Glu Ala Glu Glu Glu Leu Gln Leu Pro Pro Glu Gly Ile Val Gly Gly
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Gln Phe Ser Thr Ala Asp Ile Asp Pro Arg Trp Leu Arg Pro Thr Pro
65                  70                  75                  80
Leu Ala Leu Asp Pro Ser Thr Glu Pro Leu Ile Phe Gln Gln Leu Glu
                85                  90                  95
Ile Asp His Tyr Val Gly Thr Ser Pro Pro Leu Pro Glu Gly Pro Pro
            100                 105                 110
Ala Ser Arg Asn Ser Val Pro Ile Leu Arg Ala Phe Gly Val Thr Asp
        115                 120                 125
Glu Gly Phe Ser Val Cys Cys His Ile His Gly Phe Ala Pro Tyr Phe
    130                 135                 140
Tyr Thr Pro Ala Pro Pro Gly Phe Gly Ala Glu His Leu Ser Glu Leu
145                 150                 155                 160
Gln Arg Glu Leu Asn Ala Ala Ile Ser Arg Asp Gln Arg Gly Gly Lys
                165                 170                 175
Glu Leu Ser Gly Pro Ala Val Leu Ala Ile Glu Leu Cys Ser Arg Glu
            180                 185                 190
Ser Met Phe Gly Tyr His Gly His Gly Pro Ser Pro Phe Leu Arg Ile
        195                 200                 205
Thr Leu Ala Leu Pro Arg Leu Met Ala Pro Ala Arg Arg Leu Leu Glu
    210                 215                 220
Gln Gly Ile Arg Val Pro Gly Leu Gly Thr Pro Ser Phe Ala Pro Tyr
225                 230                 235                 240
Glu Ala Asn Val Asp Phe Glu Ile Arg Phe Met Val Asp Ala Asp Ile
                245                 250                 255
Val Gly Cys Asn Trp Leu Glu Leu Pro Ala Gly Lys Tyr Val Arg Arg
            260                 265                 270
Ala Glu Lys Lys Ala Thr Leu Cys Gln Leu Glu Val Asp Val Leu Trp
        275                 280                 285
Ser Asp Val Ile Ser His Pro Pro Glu Gly Gln Trp Gln Arg Ile Ala
    290                 295                 300
Pro Leu Arg Val Leu Ser Phe Asp Ile Glu Cys Ala Gly Arg Lys Gly
305                 310                 315                 320
Ile Phe Pro Glu Pro Glu Arg Asp Pro Val Ile Gln Ile Cys Ser Leu
                325                 330                 335
Gly Leu Arg Trp Gly Glu Pro Glu Pro Phe Leu Arg Leu Ala Leu Thr
            340                 345                 350
Leu Arg Pro Cys Ala Pro Ile Leu Gly Ala Lys Val Gln Ser Tyr Glu
        355                 360                 365
Arg Glu Glu Asp Leu Leu Gln Ala Trp Ala Thr Phe Ile Leu Ala Met
    370                 375                 380
Asp Pro Asp Val Ile Thr Gly Tyr Asn Ile Gln Asn Phe Asp Leu Pro
385                 390                 395                 400
Tyr Leu Ile Ser Arg Ala Gln Thr Leu Lys Val Asp Arg Phe Pro Phe
                405                 410                 415
Leu Gly Arg Val Thr Gly Leu Arg Ser Asn Ile Arg Asp Ser Ser Phe
            420                 425                 430
Gln Ser Arg Gln Val Gly Arg Arg Asp Ser Lys Val Val Ser Met Val
        435                 440                 445
Gly Arg Val Gln Met Asp Met Leu Gln Val Leu Leu Arg Glu Tyr Lys
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Leu Arg Ser Tyr Thr Leu Asn Ala Val Ser Phe His Phe Leu Gly Glu
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Phe Leu Pro Leu Arg Leu Leu Glu Arg Leu Met Val Leu Val Asn Asn
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Val Glu Met Ala Arg Val Thr Gly Val Pro Leu Gly Tyr Leu Leu Ser
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Arg Gly Gln Gln Val Lys Val Val Ser Gln Leu Leu Arg Gln Ala Met
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Arg Glu Gly Leu Leu Met Pro Val Val Lys Thr Glu Gly Gly Glu Asp
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Tyr Thr Gly Ala Thr Val Ile Glu Pro Leu Lys Gly Tyr Tyr Asp Val
            580                 585                 590
Pro Ile Ala Thr Leu Asp Phe Ser Ser Leu Tyr Pro Ser Ile Met Met
        595                 600                 605
Ala His Asn Leu Cys Tyr Thr Thr Leu Leu Arg Pro Gly Ala Ala Gln
    610                 615                 620
Lys Leu Gly Leu Lys Pro Asp Glu Phe Ile Lys Thr Pro Thr Gly Asp
625                 630                 635                 640
Glu Phe Val Lys Ala Ser Val Arg Lys Gly Leu Leu Pro Gln Ile Leu
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Glu Asn Leu Leu Ser Ala Arg Lys Arg Ala Lys Ala Glu Leu Ala Gln
            660                 665                 670
Glu Thr Asp Pro Leu Arg Arg Gln Val Leu Asp Gly Arg Gln Leu Ala
        675                 680                 685
Leu Lys Val Ser Pro Asn Ser Val Tyr Gly Phe Thr Gly Ala Gln Val
    690                 695                 700
Gly Lys Leu Pro Cys Leu Glu Ile Ser Gln Ser Val Thr Gly Phe Gly
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Arg Gln Met Ile Glu Lys Thr Lys Gln Leu Val Glu Thr Lys Tyr Thr
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Leu Glu Asn Gly Tyr Asp Ala Asn Ala Lys Val Val Tyr Gly Asp Thr
            740                 745                 750
Asp Ser Val Met Cys Arg Phe Gly Val Ser Ser Val Ala Glu Ala Met
        755                 760                 765
Ser Leu Gly Arg Glu Ala Ala Asn Trp Val Ser Ser His Phe Pro Ser
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Pro Ile Arg Leu Glu Phe Glu Lys Val Tyr Phe Pro Tyr Leu Leu Ile
785                 790                 795                 800
Ser Lys Lys Arg Tyr Ala Gly Leu Leu Phe Ser Ser Arg Ser Asp Ala
                805                 810                 815
His Asp Arg Met Asp Cys Lys Gly Leu Glu Ala Val Arg Arg Asp Asn
            820                 825                 830
Cys Pro Leu Val Ala Asn Leu Val Thr Ser Ser Leu Arg Arg Ile Leu
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Val Asp Arg Asp Pro Asp Gly Ala Val Ala His Ala Lys Asp Val Ile
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Ser Asp Leu Leu Cys Asn Arg Ile Asp Ile Ser Gln Leu Val Ile Thr
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Lys Glu Leu Thr Arg Ala Ala Ala Asp Tyr Ala Gly Lys Gln Ala His
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Val Glu Leu Ala Glu Arg Met Arg Lys Arg Asp Pro Gly Ser Ala Pro
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Val Ala Ala Tyr Met Lys Ser Glu Asp Pro Leu Phe Val Leu Glu His
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Ser Leu Pro Ile Asp Thr Gln Tyr Tyr Leu Glu Gln Gln Leu Ala Lys
945                 950                 955                 960
Pro Leu Leu Arg Ile Phe Glu Pro Ile Leu Gly Glu Gly Arg Ala Glu
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Ser Val Leu Leu Arg Gly Asp His Thr Arg Cys Lys Thr Val Leu Thr
            980                 985                 990
Ser Lys Val Gly Gly Leu Leu Ala Phe Thr Lys Arg Arg Asn Ser Cys
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Ile Gly Cys Arg Ser Val Ile Asp His Gln Gly Ala Val Cys Lys Phe
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Cys Gln Pro Arg Glu Ser Glu Leu Tyr Gln Lys Glu Val Ser His Leu
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Pro Ile Phe Tyr Met Arg Lys Lys Val Arg Lys Asp Leu Glu Asp Gln
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<212> PRT
<213> Bos taurus

<400> 62
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        35                  40                  45
Arg Leu Gln Glu Gln Glu Glu Glu Glu Leu Gln Ser Ala Leu Glu Ala
    50                  55                  60
Ala Asp Gly Gln Phe Ser Pro Thr Ala Ile Asp Ala Arg Trp Leu Arg
65                  70                  75                  80
Pro Ala Pro Pro Ala Leu Asp Pro Gln Met Glu Pro Leu Ile Phe Gln
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Gln Leu Glu Ile Asp His Tyr Val Ala Pro Ala Arg Pro Leu Pro Gly
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Ala Pro Pro Pro Ser Gln Asp Ser Val Pro Ile Leu Arg Ala Phe Gly
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Val Thr Asn Glu Gly Val Ser Val Cys Cys His Ile His Gly Phe Ala
    130                 135                 140
Pro Tyr Phe Tyr Thr Pro Ala Pro Pro Gly Phe Gly Pro Glu His Leu
145                 150                 155                 160
Ser Glu Leu Gln Arg Glu Leu Ser Ala Ala Ile Ser Arg Asp Gln Arg
                165                 170                 175
Gly Gly Lys Glu Leu Thr Gly Pro Ala Val Leu Ala Val Glu Leu Cys
            180                 185                 190
Ser Arg Glu Ser Met Phe Gly Tyr His Gly His Gly Pro Ser Pro Phe
        195                 200                 205
Leu Arg Ile Thr Leu Ala Leu Pro Arg Leu Met Ala Pro Ala Arg Arg
    210                 215                 220
Leu Leu Glu Gln Gly Ile Arg Leu Ala Gly Leu Gly Thr Pro Ser Phe
225                 230                 235                 240
Ala Pro Tyr Glu Ala Asn Val Asp Phe Glu Ile Arg Phe Met Val Asp
                245                 250                 255
Thr Asp Ile Val Gly Cys Asn Trp Leu Glu Leu Pro Ala Gly Lys Tyr
            260                 265                 270
Ile Leu Arg Pro Glu Gly Lys Ala Thr Leu Cys Gln Leu Glu Ala Asp
        275                 280                 285
Val Leu Trp Ser Asp Val Ile Ser His Pro Pro Glu Gly Glu Trp Gln
    290                 295                 300
Arg Ile Ala Pro Leu Arg Val Leu Ser Phe Asp Ile Glu Cys Ala Gly
305                 310                 315                 320
Arg Lys Gly Ile Phe Pro Glu Pro Glu Arg Asp Pro Val Ile Gln Ile
                325                 330                 335
Cys Ser Leu Gly Leu Arg Trp Gly Glu Pro Glu Pro Phe Leu Arg Leu
            340                 345                 350
Ala Leu Thr Leu Arg Pro Cys Ala Pro Ile Leu Gly Ala Lys Val Gln
        355                 360                 365
Ser Tyr Glu Arg Glu Glu Asp Leu Leu Gln Ala Trp Ser Thr Phe Ile
    370                 375                 380
Arg Ile Met Asp Pro Asp Val Ile Thr Gly Tyr Asn Ile Gln Asn Phe
385                 390                 395                 400
Asp Leu Pro Tyr Leu Ile Ser Arg Ala Gln Thr Leu Lys Val Pro Gly
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Phe Pro Leu Leu Gly Arg Val Ile Gly Leu Arg Ser Asn Ile Arg Glu
            420                 425                 430
Ser Ser Phe Gln Ser Arg Gln Thr Gly Arg Arg Asp Ser Lys Val Val
        435                 440                 445
Ser Met Val Gly Arg Val Gln Met Asp Met Leu Gln Val Leu Leu Arg
    450                 455                 460
Glu Tyr Lys Leu Arg Ser Tyr Thr Leu Asn Ala Val Ser Phe His Phe
465                 470                 475                 480
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Gln Asn Gly Asn Asp Gln Thr Arg Arg Arg Leu Ala Val Tyr Cys Leu
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Lys Asp Ala Phe Leu Pro Leu Arg Leu Leu Glu Arg Leu Met Val Leu
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Gln Ala Met Arg Gln Gly Leu Leu Met Pro Val Val Lys Thr Glu Gly
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Gly Glu Asp Tyr Thr Gly Ala Thr Val Ile Glu Pro Leu Lys Gly Tyr
            580                 585                 590
Tyr Asp Val Pro Ile Ala Thr Leu Asp Phe Ser Ser Leu Tyr Pro Ser
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Ile Met Met Ala His Asn Leu Cys Tyr Thr Thr Leu Leu Arg Pro Gly
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625                 630                 635                 640
Thr Gly Asp Glu Phe Val Lys Ala Ser Val Arg Lys Gly Leu Leu Pro
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Gln Ile Leu Glu Asn Leu Leu Ser Ala Arg Lys Arg Ala Lys Ala Glu
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Leu Ala Lys Glu Thr Asp Pro Leu Arg Arg Gln Val Leu Asp Gly Arg
        675                 680                 685
Gln Leu Ala Leu Lys Val Ser Ala Asn Ser Val Tyr Gly Phe Thr Gly
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Ala Gln Val Gly Arg Leu Pro Cys Leu Glu Ile Ser Gln Ser Val Thr
705                 710                 715                 720
Gly Phe Gly Arg Gln Met Ile Glu Lys Thr Lys Gln Leu Val Glu Thr
                725                 730                 735
Lys Tyr Thr Val Glu Asn Gly Tyr Ser Thr Ser Ala Lys Val Val Tyr
            740                 745                 750
Gly Asp Thr Asp Ser Val Met Cys Arg Phe Gly Val Ser Ser Val Ala
        755                 760                 765
Glu Ala Met Ala Leu Gly Arg Glu Ala Ala Asp Trp Val Ser Gly His
    770                 775                 780
Phe Pro Ser Pro Ile Arg Leu Glu Phe Glu Lys Val Tyr Phe Pro Tyr
785                 790                 795                 800
Leu Leu Ile Ser Lys Lys Arg Tyr Ala Gly Leu Leu Phe Ser Ser Arg
                805                 810                 815
Pro Asp Ala His Asp Arg Met Asp Cys Lys Gly Leu Glu Ala Val Arg
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Arg Asp Asn Cys Pro Leu Val Ala Asn Leu Val Thr Ala Ser Leu Arg
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Arg Leu Leu Ile Asp Arg Asp Pro Ser Gly Ala Val Ala His Ala Gln
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Asp Val Ile Ser Asp Leu Leu Cys Asn Arg Ile Asp Ile Ser Gln Leu
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Val Ile Thr Lys Glu Leu Thr Arg Ala Ala Ala Asp Tyr Ala Gly Lys
                885                 890                 895
Gln Ala His Val Glu Leu Ala Glu Arg Met Arg Lys Arg Asp Pro Gly
            900                 905                 910
Ser Ala Pro Ser Leu Gly Asp Arg Val Pro Tyr Val Ile Ile Ser Ala
        915                 920                 925
Ala Lys Gly Val Ala Ala Tyr Met Lys Ser Glu Asp Pro Leu Phe Val
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Val Leu Thr Gly Lys Val Gly Gly Leu Leu Ala Phe Ala Lys Arg Arg
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Asn Cys Cys Ile Gly Cys Arg Thr Val Leu Ser His Gln Gly Ala Val
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Cys Lys Phe Cys Gln Pro Arg Glu Ser Glu Leu Tyr Gln Lys Glu Val
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Ser His Leu Ser Ala Leu Glu Glu Arg Phe Ser Arg Leu Trp Thr Gln
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Cys Gln Arg Cys Gln Gly Ser Leu His Glu Asp Val Ile Cys Thr Ser
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Arg Asp Cys Pro Ile Phe Tyr Met Arg Lys Lys Val Arg Lys Asp Leu
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<211> 3457
<212> DNA
<213> Drosophila melanogaster

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<212> PRT
<213> Drosophila melanogaster

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Gly Asp Gly Pro Glu Asn Gln Thr Thr Ser Glu Arg Trp Ser Arg Pro
    50                  55                  60
Pro Pro Pro Glu Leu Asp Pro Ser Lys His Asn Leu Glu Phe Gln Gln
65                  70                  75                  80
Leu Asp Val Glu Asn Tyr Leu Gly Gln Pro Leu Pro Gly Met Pro Gly
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Ala Gln Ile Gly Pro Val Pro Val Val Arg Met Phe Gly Val Thr Met
            100                 105                 110
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Glu Gly Asn Ser Val Cys Cys His Val His Gly Phe Cys Pro Tyr Phe
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Tyr Ile Glu Ala Pro Ser Gln Phe Glu Glu His His Cys Glu Lys Leu
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Gln Lys Ala Leu Asp Gln Lys Val Ile Ala Asp Ile Arg Asn Asn Lys
145                 150                 155                 160
Asp Asn Val Gln Glu Ala Val Leu Met Val Glu Leu Val Glu Lys Leu
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Asn Ile His Gly Tyr Asn Gly Asp Lys Lys Gln Arg Tyr Ile Lys Ile
            180                 185                 190
Ser Val Thr Leu Pro Arg Phe Val Ala Ala Ala Ser Arg Leu Leu Lys
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Lys Glu Val Ile Met Ser Glu Ile Asp Phe Gln Asp Cys Arg Ala Phe
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225                 230                 235                 240
Val Gly Cys Asn Trp Ile Glu Leu Pro Met Gly His Trp Arg Ile Arg
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Asn Ser His Ser Lys Pro Leu Pro Glu Ser Arg Cys Gln Ile Glu Val
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Asp Val Ala Phe Asp Arg Phe Ile Ser His Glu Pro Glu Gly Glu Trp
        275                 280                 285
Ser Lys Val Ala Pro Phe Arg Ile Leu Ser Phe Asp Ile Glu Cys Ala
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Gly Arg Lys Gly Ile Phe Pro Glu Ala Lys Ile Asp Pro Val Ile Gln
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Ile Ala Asn Met Val Ile Arg Gln Gly Glu Arg Glu Pro Phe Ile Arg
                325                 330                 335
Asn Val Phe Thr Leu Asn Glu Cys Ala Pro Ile Ile Gly Ser Gln Val
            340                 345                 350
Leu Cys His Asp Lys Glu Thr Gln Met Leu Asp Lys Trp Ser Ala Phe
        355                 360                 365
Val Arg Glu Val Asp Pro Asp Ile Leu Thr Gly Tyr Asn Ile Asn Asn
    370                 375                 380
Phe Asp Phe Pro Tyr Leu Leu Asn Arg Ala Ala His Leu Lys Val Arg
385                 390                 395                 400
Asn Phe Glu Tyr Leu Gly Arg Ile Lys Asn Ile Arg Ser Val Ile Lys
                405                 410                 415
Glu Gln Met Leu Gln Ser Lys Gln Met Gly Arg Arg Glu Asn Gln Tyr
            420                 425                 430
Val Asn Phe Glu Gly Arg Val Pro Phe Asp Leu Leu Phe Val Leu Leu
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Arg Asp Tyr Lys Leu Arg Ser Tyr Thr Leu Asn Ala Val Ser Tyr His
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Phe Leu Gln Glu Gln Lys Glu Asp Val His His Ser Ile Ile Thr Asp
465                 470                 475                 480
Leu Gln Asn Gly Asp Glu Gln Thr Arg Arg Arg Ser Ala Met Tyr Cys
                485                 490                 495
Leu Lys Asp Ala Tyr Leu Pro Leu Arg Leu Leu Glu Lys Leu Met Ala
            500                 505                 510
Ile Val Asn Tyr Met Glu Met Ala Arg Val Thr Gly Val Pro Leu Glu
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Ser Leu Leu Thr Arg Gly Gln Gln Ile Lys Val Leu Ser Gln Leu Leu
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Pro Ser Ile Met Met Ala His Asn Leu Cys Tyr Thr Thr Leu Val Leu
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Gly Gly Thr Arg Glu Lys Leu Arg Gln Gln Glu Asn Leu Gln Asp Asp
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Gln Val Glu Arg Thr Pro Ala Asn Asn Tyr Phe Val Lys Ser Glu Val
625                 630                 635                 640
Arg Arg Gly Leu Leu Pro Glu Ile Leu Glu Ser Leu Leu Ala Ala Arg
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Lys Arg Ala Lys Asn Asp Leu Lys Val Glu Thr Asp Pro Phe Lys Arg
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Lys Val Leu Asp Gly Arg Gln Leu Ala Leu Lys Ile Ser Ala Asn Ser
        675                 680                 685
Val Tyr Gly Phe Thr Gly Ala Gln Val Gly Lys Leu Pro Cys Leu Glu
    690                 695                 700
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Lys Asn Glu Val Glu Ser His Tyr Thr Gln Ala Asn Gly Tyr Glu Asn
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Asn Ala Val Val Ile Tyr Gly Asp Thr Asp Ser Val Met Val Asn Phe
            740                 745                 750
Gly Val Lys Thr Leu Glu Arg Ser Met Glu Leu Gly Arg Glu Ala Ala
        755                 760                 765
Glu Leu Val Ser Ser Lys Phe Val His Pro Ile Lys Leu Glu Phe Glu
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Lys Val Tyr Tyr Pro Tyr Leu Leu Ile Asn Lys Lys Arg Tyr Ala Gly
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Leu Tyr Phe Thr Arg Pro Asp Thr Tyr Asp Lys Met Asp Cys Lys Gly
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Val Ala Tyr Val Lys Gln Val Ile Ala Asp Leu Leu Cys Asn Arg Ile
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Asp Ile Ser His Leu Val Ile Thr Lys Glu Leu Ala Lys Thr Asp Tyr
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Ala Ala Lys Gln Ala His Val Glu Leu Ala Ala Lys Met Lys Lys Arg
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Cys Ala Ala Ala Lys Asn Thr Pro Ala Tyr Gln Lys Ala Glu Asp Pro
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Leu Tyr Val Leu Glu Asn Ser Val Pro Ile Asp Ala Thr Tyr Tyr Leu
    930                 935                 940
Glu Gln Gln Leu Ser Lys Pro Leu Leu Arg Ile Phe Glu Pro Ile Leu
945                 950                 955                 960
Gly Asp Asn Ala Glu Ser Ile Leu Leu Lys Gly Glu His Thr Arg Thr
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Lys Lys Thr Ser Cys Leu Gly Cys Lys Ser Leu Met Pro Lys Gly Tyr
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Glu Gln Ala Cys Leu Cys Pro His Cys Glu Pro Arg Met Ser Glu Leu
    1010                1015                1020
Tyr Gln Lys Glu Val Gly Ala Lys Arg Glu Leu Glu Glu Thr Phe Ser
1025                1030                1035                1040
Arg Leu Trp Thr Glu Cys Gln Arg Cys Gln Glu Ser Leu His Glu Glu
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Val Ile Cys Ser Asn Arg Asp Cys Pro Ile Phe Tyr Met Arg Gln Lys
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<211> 9064
<212> DNA
<213> Drosophila melanogaster

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Tyr Arg Gln Ser Arg Glu Asn Asp Lys Ile Asp Ser Lys Tyr Gly Phe
        35                  40                  45
Asp Arg Val Lys Asp Ser Gln Glu Arg Thr Gly Tyr Leu Ile Asn Met
    50                  55                  60
His Ser Asn Glu Val Leu Asp Glu Asp Arg Arg Leu Ile Ala Ala Leu
65                  70                  75                  80
Asp Leu Phe Phe Ile Gln Met Asp Gly Ser Arg Phe Lys Cys Thr Val
                85                  90                  95
Ala Tyr Gln Pro Tyr Leu Leu Ile Arg Pro Glu Asp Asn Met His Leu
            100                 105                 110
Glu Val Ala Arg Phe Leu Gly Arg Lys Tyr Ser Gly Gln Ile Ser Gly
        115                 120                 125
Leu Glu His Ile Thr Lys Glu Asp Leu Asp Leu Pro Asn His Leu Ser
    130                 135                 140
Gly Leu Gln Gln Gln Tyr Ile Lys Leu Ser Phe Leu Asn Gln Thr Ala
145                 150                 155                 160
Met Thr Lys Val Arg Arg Glu Leu Met Ser Ala Val Lys Arg Asn Gln
                165                 170                 175
Glu Arg Gln Lys Ser Asn Thr Tyr Tyr Met Gln Met Leu Ala Thr Ser
            180                 185                 190
Leu Ala Gln Ser Ser Ala Gly Ser Glu Asp Ala Thr Leu Gly Lys Arg
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Gln Gln Asp Tyr Met Asp Cys Ile Val Asp Ile Arg Glu His Asp Val
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Pro Tyr His Val Arg Val Ser Ile Asp Leu Arg Ile Phe Cys Gly Gln
225                 230                 235                 240
Trp Tyr Asn Ile Arg Cys Arg Ser Gly Val Glu Leu Pro Thr Ile Thr
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                245                 250                 255
Cys Arg Pro Asp Ile Leu Asp Arg Pro Glu Pro Val Val Leu Ala Phe
            260                 265                 270
Asp Ile Glu Thr Thr Lys Leu Pro Leu Lys Phe Pro Asp Ala Gln Thr
        275                 280                 285
Asp Gln Val Met Met Ile Ser Tyr Met Ile Asp Gly Gln Gly Tyr Leu
    290                 295                 300
Ile Thr Asn Arg Glu Ile Ile Ser Ser Asn Val Asp Asp Phe Glu Tyr
305                 310                 315                 320
Thr Pro Lys Pro Glu Phe Glu Gly Asn Phe Ile Val Phe Asn Glu Glu
                325                 330                 335
Asn Glu Met Gln Leu Leu Gln Arg Phe Phe Asp His Ile Met Glu Val
            340                 345                 350
Arg Pro His Ile Ile Val Thr Tyr Asn Gly Asp Phe Phe Asp Trp Pro
        355                 360                 365
Phe Val Glu Thr Arg Ala Ala Val Tyr Asp Leu Asp Met Lys Gln Glu
    370                 375                 380
Ile Gly Phe Ser Lys Leu Arg Asp Gly Asn Tyr Leu Ser Arg Pro Ala
385                 390                 395                 400
Ile His Met Asp Cys Leu Cys Trp Val Lys Arg Asp Ser Tyr Leu Pro
                405                 410                 415
Val Gly Ser Gln Gly Leu Lys Ala Val Ala Lys Ala Lys Leu Arg Tyr
            420                 425                 430
Asp Pro Val Glu Leu Asp Pro Glu Asp Met Cys Arg Met Ala Val Glu
        435                 440                 445
Gln Pro Gln Val Leu Ala Asn Tyr Ser Val Ser Asp Ala Val Ala Thr
    450                 455                 460
Tyr Tyr Leu Tyr Met Lys Tyr Val His Pro Phe Ile Phe Ala Leu Asn
465                 470                 475                 480
Thr Ile Ile Pro Met Glu Pro Asp Glu Ile Leu Arg Lys Gly Ser Gly
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Thr Leu Cys Glu Thr Leu Leu Met Val Glu Ala Tyr His Ala Gln Ile
            500                 505                 510
Val Tyr Pro Asn Lys His Gln Ser Glu Leu Asn Lys Leu Ser Asn Glu
        515                 520                 525
Gly His Val Leu Asp Ser Glu Thr Tyr Val Gly Gly His Val Glu Ala
    530                 535                 540
Leu Glu Ser Gly Val Phe Arg Ala Asp Ile Pro Cys Arg Phe Arg Leu
545                 550                 555                 560
Asp Pro Ala Met Val Lys Gln Leu Gln Glu Gln Val Asp Ala Val Leu
                565                 570                 575
Arg His Ala Ile Glu Val Glu Glu Gly Ile Pro Leu Glu Lys Val Leu
            580                 585                 590
Asn Leu Asp Glu Val Arg Gln Glu Ile Val Gln Gly Leu Gln Gly Leu
        595                 600                 605
His Asp Ile Pro Asn Arg Leu Glu Gln Pro Val Ile Tyr His Leu Asp
    610                 615                 620
Val Gly Ala Met Tyr Pro Asn Ile Ile Leu Thr Asn Arg Leu Gln Pro
625                 630                 635                 640
Ser Ala Met Val Ser Asp Leu Asp Cys Ala Ala Cys Asp Phe Asn Lys
                645                 650                 655
Pro Gly Val Arg Cys Lys Arg Ser Met Asp Trp Leu Trp Arg Gly Glu
            660                 665                 670
Met Leu Pro Ala Ser Arg Asn Glu Phe Gln Arg Ile Gln Gln Gln Leu
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Glu Thr Glu Lys Phe Pro Pro Leu Phe Pro Gly Gly Pro Gln Arg Ala
    690                 695                 700
Phe His Glu Leu Ser Lys Glu Asp Gln Ala Ala Tyr Glu Lys Lys Arg
705                 710                 715                 720
Leu Thr Asp Tyr Cys Arg Lys Ala Tyr Lys Lys Thr Lys Leu Thr Lys
                725                 730                 735
Leu Glu Thr Arg Thr Ser Thr Ile Cys Gln Lys Glu Asn Ser Phe Tyr
            740                 745                 750
Val Asp Thr Val Arg Ala Phe Arg Asp Arg Arg Tyr Glu Tyr Lys Gly
        755                 760                 765
Leu Thr Lys Val Ala Lys Ala Ser Val Asn Ala Ala Val Ala Ser Gly
    770                 775                 780
Asp Ala Ala Glu Ile Lys Ala Ala Lys Gly Arg Glu Val Leu Tyr Asp
785                 790                 795                 800
Ser Leu Gln Leu Ala His Lys Cys Ile Leu Asn Ser Phe Tyr Gly Tyr
                805                 810                 815
Val Met Arg Arg Gly Ala Arg Trp His Ser Met Pro Met Ala Gly Ile
            820                 825                 830
Val Cys Leu Thr Gly Ser Asn Ile Ile Thr Lys Ala Arg Glu Ile Ile
        835                 840                 845
Glu Arg Val Gly Arg Pro Leu Glu Leu Asp Thr Asp Gly Ile Trp Cys
    850                 855                 860
Ile Leu Pro Gly Ser Phe Pro Gln Glu Phe Thr Ile His Thr Ser His
865                 870                 875                 880
Glu Lys Lys Lys Lys Ile Asn Ile Ser Tyr Pro Asn Ala Val Leu Asn
                885                 890                 895
Thr Met Val Lys Asp His Phe Thr Asn Asp Gln Tyr His Glu Leu Arg
            900                 905                 910
Lys Asp Lys Glu Asn Asn Leu Pro Lys Tyr Asp Ile Arg Asp Glu Asn
        915                 920                 925
Ser Ile Phe Phe Glu Val Asp Gly Pro Tyr Leu Ala Met Val Leu Pro
    930                 935                 940
Ala Ala Lys Glu Glu Gly Lys Lys Leu Lys Lys Arg Tyr Ala Val Phe
945                 950                 955                 960
Asn Phe Asp Gly Thr Leu Ala Glu Leu Lys Gly Phe Glu Val Lys Arg
                965                 970                 975
Arg Gly Glu Leu Gln Leu Ile Lys Asn Phe Gln Ser Ser Val Phe Glu
            980                 985                 990
Ala Phe Leu Ala Gly Ser Thr Leu Glu Glu Cys Tyr Ala Ser Val Ala
        995                 1000                1005
Lys Val Ala Asp Tyr Trp Leu Asp Val Leu Tyr Ser Arg Gly Ser Asn
    1010                1015                1020
Leu Pro Asp Ser Glu Leu Phe Glu Leu Ile Ser Glu Asn Lys Ser Met
1025                1030                1035                1040
Ser Lys Lys Leu Glu Glu Tyr Gly Ala Gln Lys Ser Thr Ser Ile Ser
                1045                1050                1055
Thr Ala Lys Arg Leu Ala Glu Phe Leu Gly Glu Gln Met Val Lys Asp
            1060                1065                1070
Ala Gly Leu Ala Cys Lys Tyr Ile Ile Ser Lys Lys Pro Glu Gly Ala
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Pro Val Thr Glu Arg Ala Ile Pro Leu Ala Ile Phe Gln Ser Glu Pro
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Ser Val Arg Arg His His Leu Arg Arg Trp Leu Lys Asp Asn Thr Met
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Gly Asp Ala Asp Ile Arg Asp Val Leu Asp Trp Asn Tyr Tyr Ile Glu
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Arg Leu Gly Gly Thr Ile Gln Lys Ile Ile Thr Ile Pro Ala Ala Leu
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Gln Gly Leu Ala Asn Pro Val Pro Arg Val Gln His Pro Asp Trp Leu
        1155                1160                1165
His Lys Lys Met Leu Glu Lys Asn Asp Val Leu Lys Gln Arg Arg Ile
    1170                1175                1180
Asn Glu Met Phe Thr Ser Arg Pro Lys Pro Lys Pro Leu Ala Thr Glu
1185                1190                1195                1200
Glu Asp Lys Leu Ala Asp Met Glu Asp Leu Ala Gly Lys Asp Gly Gly
                1205                1210                1215
Glu Gly Ala Ala Gly Cys Pro Ile Val Thr Lys Arg Lys Arg Ile Gln
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Leu Glu Glu His Asp Glu Glu Glu Ala Gln Pro Gln Ala Thr Thr Trp
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Arg Gln Ala Leu Gly Ala Pro Pro Pro Ile Gly Glu Thr Arg Lys Thr
    1250                1255                1260
Ile Val Glu Trp Val Arg Phe Gln Lys Lys Lys Trp Lys Trp Gln Gln
1265                1270                1275                1280
Asp Gln Arg Gln Arg Asn Arg Gln Ala Ser Lys Arg Thr Arg Gly Glu
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Asp Pro Arg Tyr Thr Gly Arg Phe Leu Arg Arg Ala Gln Arg Thr Leu
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Leu Asp Gln Pro Trp Gln Ile Val Gln Leu Val Pro Val Asp Asp Leu
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Gly His Phe Thr Val Trp Ala Leu Ile Gly Glu Glu Leu His Lys Ile
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Lys Leu Thr Val Pro Arg Ile Phe Tyr Val Asn Gln Arg Ser Ala Ala
1345                1350                1355                1360
Pro Pro Glu Glu Gly Gln Leu Trp Arg Lys Val Asn Arg Val Leu Pro
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Arg Ser Arg Pro Val Phe Asn Leu Tyr Arg Tyr Ser Val Pro Glu Gln
            1380                1385                1390
Leu Phe Arg Asp Asn Ser Leu Gly Met Leu Ala Asp Leu Ala Thr Pro
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Asp Ile Glu Gly Ile Tyr Glu Thr Gln Met Thr Leu Glu Phe Arg Ala
    1410                1415                1420
Leu Met Asp Met Gly Cys Ile Cys Gly Val Gln Arg Glu Glu Ala Arg
1425                1430                1435                1440
Arg Leu Ala Gln Leu Ala Thr Lys Asp Leu Glu Thr Phe Ser Ile Glu
                1445                1450                1455
Gln Leu Glu Gln Gly Pro Arg Leu Arg Ser Asn Ile Trp Leu Ala Pro
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Thr Ile Asp Cys Ala Lys Ser Thr Cys Ile Ser Ile Thr His Arg Arg
        1475                1480                1485
Pro Arg Arg Arg Ser Val Ser Leu Ile Pro Met Pro Ser Lys Lys Ala
    1490                1495                1500
Phe Val Phe Ala Leu Asp Thr Val Arg Ala Asn Gln Met Pro Asn Met
1505                1510                1515                1520
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Ala Glu Glu Gln Asp Lys Ile Pro Val Glu Asp Tyr Thr Phe Glu Val
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Leu Ile Glu Val Asp Val Lys Gln Ile Tyr Arg His Ile Gln Arg Ala
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Leu Thr Thr Tyr Lys Gln Glu His Gln Gly Pro Pro Thr Ile Leu Cys
    1570                1575                1580
Leu Gln Thr Ala Leu Ser Ala Arg Lys Leu Ser Leu Ala Met Pro Ile
1585                1590                1595                1600
Leu Leu Glu Phe Pro Gln Ala Gln Ile His Ile Ser Asp Asp Ala Ser
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Leu Leu Ser Gly Leu Asp Trp Gln Arg Gln Gly Ser Arg Ala Val Ile
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Arg His Phe Leu Asn Leu Asn Asn Val Leu Asp Leu Met Leu Asp Gln
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Cys Arg Tyr Phe His Val Pro Ile Gly Asn Met Pro Pro Asp Thr Val
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Leu Phe Gly Ala Asp Leu Phe Phe Ala Arg Leu Leu Gln Arg His Asn
1665                1670                1675                1680
Phe Val Leu Trp Trp Ser Ala Ser Thr Arg Pro Asp Leu Gly Gly Arg
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Glu Ala Asp Asp Ser Arg Leu Leu Ala Glu Phe Glu Glu Ser Ile Ser
            1700                1705                1710
Val Val Gln Asn Lys Ala Gly Phe Tyr Pro Asp Val Cys Val Glu Leu
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Ala Leu Asp Ser Leu Ala Val Ser Ala Leu Leu Gln Ser Thr Arg Ile
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Gln Glu Met Glu Gly Ala Ser Ser Ala Ile Thr Phe Asp Val Met Pro
1745                1750                1755                1760
Gln Val Ser Leu Glu Glu Met Ile Gly Thr Val Pro Ala Ala Thr Leu
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Pro Ser Tyr Asp Glu Thr Ala Leu Cys Ser Ala Ala Phe Arg Val Met
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Arg Ser Met Val Asn Gly Trp Leu Arg Glu Val Ser Ile Asn Arg Asn
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Ile Phe Ser Asp Phe Gln Ile Val His Phe Tyr Arg Trp Val Arg Ser
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1825                1830                1835                1840
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Gly Ala Thr Ile Ile Tyr Ala Asp Phe Asn Arg Ile Ile Leu Ser Ser
            1860                1865                1870
Gly Lys Lys Thr Val Ser Asp Ala Leu Gly Tyr Val Asp Tyr Ile Val
        1875                1880                1885
Gln Ser Leu Arg Asn Lys Glu Met Phe His Ser Ile Gln Leu Ser Phe
    1890                1895                1900
Glu Gln Cys Trp Asn Phe Met Leu Trp Met Asp Gln Ala Asn Phe Ser
1905                1910                1915                1920
Gly Ile Arg Gly Lys Leu Pro Lys Gly Ile Asp Glu Thr Val Ser Ser
                1925                1930                1935
Ile Val Ser Thr Thr Met Ile Arg Asp Ser Glu Arg Asn Gln Asp Asp
            1940                1945                1950
Asp Glu Asp Glu Glu Glu Asp Ser Glu Asn Arg Asp Pro Val Glu Ser
        1955                1960                1965
Asn Glu Ala Glu Gln Asp Gln Glu Asp Glu Leu Ser Leu Glu Leu Asn
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                2005                2010                2015
Thr Thr Glu Gln Ala Ile Lys Asp Ile Ser His Cys Ala Phe Asp Phe
            2020                2025                2030
Ile Leu Lys Leu His Lys Asn Tyr Gly Lys Gly Lys Pro Ser Pro Gly
        2035                2040                2045
Leu Glu Leu Ile Arg Thr Leu Ile Lys Ala Leu Ser Val Asp Lys Thr
    2050                2055                2060
Leu Ala Glu Gln Ile Asn Glu Leu Arg Arg Asn Met Leu Arg Leu Val
2065                2070                2075                2080
Gly Ile Gly Glu Phe Ser Asp Leu Ala Glu Trp Glu Asp Pro Cys Asp
                2085                2090                2095
Ser His Ile Ile Asn Glu Val Ile Cys Lys Ala Cys Asn His Cys Arg
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Asp Leu Asp Leu Cys Lys Asp Lys His Arg Ala Met Lys Asp Gly Cys
        2115                2120                2125
Tyr Val Ala Tyr Asp Asn Glu Glu Ile Glu Met Arg Met Leu Asp Ala
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Leu Gln Arg Lys Met Met Ser Tyr Val Leu Gln Asp Leu Arg Cys Ser
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Arg Cys Ser Glu Ile Lys Arg Glu Asn Leu Ala Glu Phe Cys Thr Cys
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Ala Gly Asn Phe Val Pro Leu Ile Ser Gly Lys Asp Ile Gln Thr Leu
            2180                2185                2190
Leu Gly Thr Phe Asn Lys Val Ala Ala Asn His Lys Met Gln Leu Leu
        2195                2200                2205
Gln Gln Thr Val His Gln Ala Leu Thr Thr Pro Arg
    2210                2215                2220
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